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PSYCHICAL SEIZURES*

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The statement has been made that in certain types of abnormal behaviour the patients were experiencing "psychomotor seizures," as though the epileptic discharge were capable of creating and elaborating abnormal thought processes. From the point of view of a psychiatrist it is important to know whether this may be true. Is abnormal behaviour ever a manifestation of a continuing epileptic state? Description of the psychical manifestations of certain types of local seizures and of the abnormal post-ictal states that sometimes follow may throw some light on the answer to this question.

Ictus epilepticus, or an epileptic seizure, is a state produced by intense spontaneous neuronal activity. This activity has a tendency to spread throughout the grey matter of the brain with unbridled augmentation. For the duration of the seizure, until exhaustion sets in, ganglion cells seem to be capable of abnormally great functional discharge. Furthermore, a group of cells discharging at this high rate may produce a similar state in adjacent or in connected groups. Thus, a focal epileptic discharge may spread across grey matter like a prairie fire, or it may follow more distant neuronal pathways to other areas of grey matter.

The presence of a focus of increased ganglionic activity may be detected by electro-encephalography between attacks. The increase and the spread associated with each attack are also easily recorded electrographically, and the neuronal exhaustion that follows is indicated by electrical silence. Thus the suggestion of Hughlings Jackson that seizures begin locally receives further verification. The word ictus means seizure; and we may study by electrical methods the inter-ictal state of the focus, the ictal exaltation of metabolic activity, and the post-ictal state of fatigue (Jasper and Penfield, 1943).

The clinical type of seizure depends upon the location of the initial discharge, and the attack should be classified accordingly. For example, twitching of the right thumb signifies discharge in the grey matter of the precentral gyrus where the thumb has its representation for movement. When an epileptic sees moving lights it indicates a discharge in the visual cortex of one occipital lobe. Simple lapse of consciousness without other manifestation may mean discharge in the highest level of functional integration. Any local discharge may spread farther and the seizure become more elaborate, and it may end as a generalized convulsion (grand mal). Such major seizures are apt to look very much alike from case to case if seen in the terminal stage. But the important problem is, Where was the original discharge? That question may be answered by describing the beginning of the attack or the character of the minor seizure. Do not believe, until proved, the statement that a certain patient's attacks begin in various ways, for it is almost never true. Different stages may be observed or remembered. A sensory aura is not a phenomenon essentially different from a seizure. It is a minor seizure if it goes no further. If it is a prelude it indicates the firing of the fuse that is about to explode a succession of nerve-cell groups.

For the purposes of this discussion it is important to emphasize that during local epileptic discharge, as well as in the subsequent period of fatigue, the involved area is paralysed so far as any useful function is concerned. The thumb which is forced into Jacksonian movement cannot be controlled by the patient unless he holds it with his other hand, which still responds normally to activity of the opposite hemisphere. During a visual seizure the patient sees only the lights that blot out vision. He is blind to all else. The petit-mal attack, or highest level seizure, "blacks out" consciousness for its duration.

Ictus epilepticus may thus produce amazingly selective paralysis. It was the realization of this fact that placed in the hands of Hughlings Jackson a master key which he used to unlock many an anatomical and physiological problem. The ictal paralysis and the post-ictal paralysis may be equally complete. The thumb is paralysed, the eye is blind, or the patient is unconscious for a little time after the explosion is over as well as during the seizure. This is the negative side of a seizure. It is often overlooked in our thinking, and many seizures actually manifest themselves only by the silence caused by this negative state. This is true in general of the complicated functions of speech and thinking. Discharge in one frontal pole produces silence and loss of consciousness. Discharge in Broca's area of the dominant hemisphere produces not speech but cessation of speaking.

Under the heading of motor or sensory seizures the following may be listed: Jacksonian motor, somato-sensory, contraversive without loss of consciousness, masticatory, auditory, vertiginous, visual, olfactory, autonomic. All of these are either sensory or motor, at least at the outset, and sometimes they may be mixed. Two types of seizure may be mentioned which are not strictly sensory, motor, or psychical: unconscious contraversive and illusion of perception.

The unconscious contraversive seizure results from discharge in one frontal pole. It begins with silence—that is, with loss of all consciousness—and it is followed by turning to the opposite side. Illusion of perception results commonly from discharge in the cortex of one temporal lobe. During a seizure of this sort the patient is still aware of his surroundings, but the interpretation of his present experience is altered. The illusion may be that things seen seem to go farther away or

* Extracts from an address, delivered May 17, 1946, at Boston, and June 14, 1946, at Oxford. The complete paper will be published with other addresses in book form to commemorate the opening of the MacLean Hospital Laboratories, Boston, Massachusetts.

to come nearer to him; or that sounds seem more distant or louder. A present experience may seem to be remembered and thus appear strangely familiar; his environment may seem suddenly strange, or the patient himself seem remote as though he were an onlooker. Such an experience arising from discharge in one or other temporal-lobe cortex suggests that there are in that region localized neuronal connexion patterns that are utilized in the interpretation of visual and auditory experience. This is one form of what was once called an intellectual aura. Hughlings Jackson referred to it as a dreamy state. But included in the dreamy states of Jackson are also the hallucinations which I have for convenience of discussion included with the psychical manifestations of seizures.

Psychical Phenomena

These attacks may end as generalized convulsions and thus may be said to become motor, but in the outset they are purely psychical phenomena.

Hallucinations.—Elaborate hallucinations, like dreams, constitute a moderately common manifestation of a seizure. The localization of ictal hallucinations is in the cortex of one temporal lobe. The experience may be entirely visual, such as a scene from the distant past. There is usually some doubling of consciousness so that the patient recognizes the significance and the unreality of the state. It may be a vivid past experience, such as that of a woman who saw herself giving birth to her child. It may repeat the formula of a familiar childhood dream, but usually it is a simple experience with no psychological significance and the elements are chiefly visual and auditory. Music as a hallucination may be a simple air or it may be a symphony. It seems to arise at the anterior pole of one temporal lobe.

A few examples may be given.

W. D. experienced an epigastric sensation which rose up to his head at the beginning of an attack. Then he heard words, usually those he had heard recently; and yet if he was at the time in conversation or listening to a lecture they were not the words of the speaker. He never thought that someone was talking to him, and he had never been fooled into believing that the radio had been turned on. He might experience the odour of iodoform at such times—suggesting spread of discharge into the uncinate gyrus.

P. R. seemed to hear the music of a symphony for a few seconds, or she would hear voices and might ask her friends to talk more loudly so that she could understand them in spite of these spurious voices. This might be followed by a feeling of warmth in the right ankle and up the right side, which seems to have been a vasomotor phenomenon. Her focus was deep in the left temporal region.

H. P. could remember an aura that referred to her childhood. She seemed to be in a park, and saw a boy there and once a girl. She thought the circumstances were always the same and always familiar. Sometimes the figure or scene came very near her, and then she felt sick in her throat. She had a superficial focus in the right temporal lobe. During an operation under local analgesia the right hemisphere of the 14-year-old girl was exposed. Some results of electrical stimulation of the temporal cortex were as follows: at one point stimulation caused her to say that she felt as though she might have an attack. When asked what she meant, she said, "That dream, but it passed over." When another point was stimulated she said, "I am seeing somebody." A short interval was allowed and then the point was stimulated again without warning the patient. After a pause she said, "It's coming again." When asked if she saw somebody she said, "Sure, a boy." At another point she said she felt queer; and at still another, lower down, she feit as though an attack were coming on, but it did not come. Stimulation at most of the other points produced some aspect of the dream. At 22 the electrode was kept in place for a longer period. She said, "Dream is starting. There are a lot of people—in the living-room—I think one of them is my mother."

From a psychological point of view there are many interesting aspects to such phenomena. The experience is a continuous progressive one like a dream. It does not happen all at once. In some cases different stages in the dream can be produced by stimulation at different points, and these points remain constant for that particular feature. It is sufficient to point out now that an acquired neuronal connexion pattern, which is evidently related to the mechanism of memory recording, may become so strongly facilitated by the recurring passage over it of an epileptic discharge that it can be activated by electrical stimulation at various neighbouring points. Furthermore, the patient can himself contemplate such hallucinations and describe them objectively just as he would report a memory that he might summon up.

Forced Thinking.—A feeling of compulsion to think or the occurrence of unusual thoughts may be a preliminary to an attack, although this is quite rare and the descriptions are nearly always meagre, as is shown by the following examples.

H. C. found that his attacks began with an alteration in his thinking. He said he felt himself forced to think about something at these times and that he knew this was a signal that an attack might be imminent. But he could not describe the alterations in his mental processes any further.

W. S. would find himself saying to himself that he "told somebody or other to do this or that." It was usually someone he knew at home, but not always the same person, and he did not seem to see the individual; but he knew a major seizure might be imminent. He stated that a succession of thoughts went through his mind.

J. J. said thoughts crowded into his mind. For example, there was a slice of bread on the table, and he felt it necessary to turn or move the bread. The thoughts did not lead him to do anything, but he knew there was a danger of an attack.

The origin of the attack in these cases has so far proved to be in the posterior part of one frontal lobe anterior to the motor cortex. Perhaps the experience is not properly called forced thinking, for it is remarkable that there are not in our series more complicated types of thought process which the patient can remember. None of the individuals regarded such thoughts as meaning anything—except a warning. Even during this alteration of thinking the subject felt himself to be an onlooker, perceived the significance of the state, and usually tried to turn his mind to something else.

Stereotyped Behaviour.—In a small group of patients there has occurred stereotyped behaviour during a seizure. One man, M. R., clutched his own throat as though he would choke himself and resisted with great strength any effort to stop him. He then behaved in a confused manner for hours. He had a scar and an epileptogenic focus, resulting from a depressed fracture, situated in the right frontal lobe near the midline and just anterior to the motor cortex. Electrical stimulation here reproduced the state just described (Penfield and Erickson, 1941). He had amnesia for the whole seizure.

More recently in several similar cases coated electrodes were placed in the subdural and extradural space about the frontal lobes so as to record the beginning and the spread of spontaneous seizures. Without describing these cases in detail here it may be pointed out simply that stereotyped abnormal behaviour has occurred during or just after a localized seizure involving the posterior or median part of one frontal lobe near the longitudinal fissure. It has not yet been observed in association with attacks arising in other areas. How much of the behaviour is the result of release of brain areas by local ictal or post-ictal paralysis and how much is due to discharge in some neurone pattern must remain an open question.

Automatism.—Automatic behaviour as a post-ictal phenomenon has been well described by Hughlings Jackson. This state is a frequent sequel to attacks arising from different areas, but it is seen most often following short attacks localized in the region of one fissure of Sylvius. Most often the seizure manifests itself only as a masticatory attack. Thus the patient smacks his lips and swallows for a time, then he is apt to walk away or move about the house in an aimless manner. Such patients are violent only if opposed. They have amnesia for the period and come to themselves rather suddenly and without a period of sleep. It is obvious that most cortical mechanisms are intact during post-ictal automatism, but the higher neural centres which are the anatomical substratum for conscious activity are paralysed.

Ictal Automatism.—This occurs most frequently in idiopathic or cryptogenic epilepsy. The discharge is evidently taking place in the neural substratum or consciousness just referred to, the highest level of integration. This is evidently a midline area in close anatomical relation with the frontal lobes, to judge from the electro-encephalographic and other evidence that need not be recapitulated now. The attack is commonly referred to as petit mal. The patient may carry on in an automatic manner activity which he had already intended, but he is

confused. The paralytic effect is produced by the discharge and may be continued during the post-ictal fatigue period. The automaticity may therefore be considered both ictal and post-ictal.

Post-Status-Epilepticus Psychotic State.—Finally, psychotic behaviour with negativism, fixed delusions, and hallucinations continuing for days and weeks occurs in rare cases. This is the sequel to a series of seizures continuing for some time. In all patients of this type that we have observed, and in which a focal discharge could be proved, the location of the focus has been in one or other frontal lobe.

For example, N. J. had a small infiltrating tumour in the left posterior frontal area. After admission she had a series of attacks originating in the left frontal region. On the sixth day she was confused, suspicious, negativistic, and said her medicine was poison. Before the attacks Dr. Jasper found multiple spikes, also slow and sharp waves originating from the area of the tumour. But during the negativistic state that followed the seizures there was an increased abnormality of cortical rhythm from the region about this focus, but only minor abnormality from posterior and contralateral regions.

This condition seems to follow a series of seizures. It follows status epilepticus. We have assumed that this is not the result of post-ictal paralysis nor of ictal discharge. Instead, it seems to be associated with an alteration in the normal function of the cortex, chiefly in one area of the brain, and is of interest because of the apparent localization of the abnormality.

Conclusion

In general, automatism may occur during or after a seizure, and post-ictal automatism may succeed ictal automatism with little or no sign of the transition. In either case it seems to be the result of functional paralysis of a restricted area of the central nervous system, an area very high in the scale of functional re-representation. It is a negative manifestation of the attack. On the other hand both hallucinations and perceptual illusions are ictal phenomena and may sometimes be produced by temporal stimulation. These states do not greatly alter the patient's behaviour, for he recognizes them to be spurious. The state which we have called forced thinking is clearly ictal. But it, too, is recognized by the patient as something different from normal thought.

Stereotyped behaviour, like automatism, occurs during a period for which the patient has no memory. It differs from automatism in that there is some definite pattern of action which the patient adopts at such times. Our observations indicate that it is ictal inasmuch as it has occurred during a seizure, but whether the behaviour is the positive result of the discharge, or whether it is due to activity of the central nervous system released from the usual influence of the portion of the frontal lobe that seems to be chiefly involved in the seizure, is not clear.

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The Ministry of Education has issued a circular (No. 117) on homecraft as a subject of further education. It is intimated that in framing their plans local authorities should not interpret the word "homecraft" too narrowly, and a list of subjects which it may embrace is given. These include sanitation, ventilation, and water supply, maternity and child welfare, the care of children, and health education, with the treatment of common accidents and ailments. The Ministry says that it should be the aim of education authorities to make provision to cover all these subjects except in so far as the needs are met by other existing agencies such as the maternity and infant welfare service. The educational provision may take various forms such as short full-time courses or longer part-time courses on selected topics, or lectures and demonstrations, or the help given at advice centres by personal contact and simple leaflets. It is added that while this further education in homecraft is primarily directed to women it should not be considered as for women only, and lectures or short courses may well be arranged for fathers and husbands concerning the problem of bringing up children or other home duties.

THE BLOOD GROUP Rh*

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PART II

CLINICAL APPLICATIONS IN TRANSFUSION THERAPY AND IN HAEMOLYTIC DISEASE OF THE NEWBORN

The Rh Factor in Blood Transfusion Therapy

As shown in the foregoing section, in each individual the Rh factor consists of two sets of three elementary antigens, and theoretically the recipient of a blood transfusion might develop antibodies against any one of the antigens which he or she lacks. Thus far five of the six possible antibodies have been identified, but while some are common others are exceedingly rare. ABO blood grouping is now so well understood and reliable grouping sera are so generally available that transfusion reactions due to errors in ABO groupings are rare. Reactions between bloods compatible on the basis of ABO groups are designated "intra-group reactions," and such intra-group incompatibility is due mainly to the Rh factor, although on rare occasions other blood group factors such as P, M, and N may be concerned.

When a Rh-negative individual receives repeated transfusions of Rh-positive blood the first transfusion is normally symptomless, and the transfused cells may survive satisfactorily in the recipient's circulation. In others the donor's cells are destroyed more quickly than usual, and the lasting benefit may not be obtained. Further transfusions of Rh-positive blood in such cases are likely to be followed by progressively more severe symptoms—chills, headache, rigors, jaundice, and, later, haemoglobinuria and anuria. These phenomena are due to iso-immunization of the Rh-negative recipient by the antigens of Rh-positive blood, and are commonly accompanied by the appearance of Rh antibodies in the serum. In most cases transfusion of Rh-positive blood must be repeated several times before iso-immunization appears; but, exceptionally, a single transfusion may initiate the process and a second transfusion be treated as incompatible (Callender and Paykoç, 1946). These workers made a careful follow-up of 100 cases. In all groups there were only two with irregular iso-agglutinins, active at 37° C., but several of the 15 Rh-negative recipients had failed to become immunized or sensitized in spite of having received as many as 30 transfusions over a period of two years. Lack of reaction in the first transfusion of Rh-positive blood to a Rh-negative recipient does not always apply to women in pregnancy or, indeed, to women who have previously borne children; this aspect of the subject is considered in detail later.

When iso-immunization of a Rh-negative recipient cde/cde is induced by transfusion of Rh-positive blood it is usually the elementary antigen D which is effective. The transfused blood in 70% of cases will contain the antigens CDe (type Rh_1 70%) and in 30% the antigens cDE (type Rh_2 30%), although in about one-half of the latter the R_2 will be associated with R_1 (type Rh_1Rh_2=15%). The resulting antibodies have usually the specificity of anti-D (85%), but this may be accompanied by the agglutinoid or blocking anti-D, so that agglutination is not apparent in tests conducted by the standard saline dilution method. In some cases the anti-D is accompanied by anti-C, and a double agglutinin serum (anti-Rh_1=87%) results. If in this case sufficient blocking anti-D develops to neutralize the agglutinating anti-D the resulting serum gives the reactions of anti-C (70%). When the transfused cells have been of type Rh_2 (cDE) only the D is usually effective and the elementary antigen E rarely gives rise to antibodies; when it does, a double agglutinin serum results (anti-D plus anti-E), and here, too, the development of blocking anti-D can give rise to a serum of more restricted specificity—the 30% anti-Rh″ (i.e., anti-E type).

An important aspect of this question is the observation that once sensitization has been established it appears to remain

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permanently imprinted on the recipient's constitution, and a further transfusion, even many years later, may be followed by a severe reaction (anamnestic reaction). There are therefore good grounds for the view (Cappell, 1944) that females in or below the reproductive period should receive by transfusion only blood of similar Rh type to their own. Diamond (1945) has emphasized that sensitization of the Rh-negative woman by transfusion of Rh-positive blood leads to the most severe forms of haemolytic disease in subsequent pregnancies, and evidence is accumulating that the indiscriminate use of blood transfusion in women without regard to the Rh factor is dangerous, and carries an unjustified hazard for the future (see leading article, *B.M.J.*, 1945, **2**, 535). In my opinion no woman in the reproductive period should ever be given blood until it has been ascertained whether she is Rh-positive or Rh-negative, and she should then receive only the appropriate type. This ideal state may be difficult to realize at present, but it represents what should be aimed at, and it would be possible if the clinicians demand it and give the necessary co-operation. In obstetric emergencies the Rh grouping is essential and should never be omitted (see later); in operations of election and in medical cases the question should be anticipated and the Rh type ascertained beforehand along with the ABO group. Every pathological or haematological department worthy of the name should be prepared to carry out such tests as required, and be able to provide the answer within a few hours at most.

Rh Factor in Pregnancy

Since approximately one marriage in eight involves a Rh-positive man and a Rh-negative woman, in about one pregnancy in ten the foetus is Rh-positive and the mother Rh-negative. Sensitization appears to occur only in about one in 25 opportunities—i.e., haemolytic disease may be expected in about 1 in 250 births. Rh incompatibility is therefore by far the most important genetic cause of foetal death, and it far outweighs congenital syphilis, with which it used to be so often confused, as a factor in neonatal mortality; nevertheless much more time and effort are put into the search for maternal and congenital syphilis in the antenatal clinics and their attendant laboratories than into Rh investigations. As in transfusion risks, the danger arises from immunization of Rh-negative mothers, in this case by a Rh-positive foetus who inherits the Rh-positive gene from the father. Taylor and Race (1944) point out that iso-immunization is more likely to occur where the father is homozygous Rh-positive (RhRh), so that each successive foetus carries the Rh-positive gene, but the disease is by no means rare with heterozygous fathers (Rhrh). In my own series many of the fathers have not been genctyped, either because they were not available or because at that time the investigation was not advanced enough and further samples could not be obtained later. I have, however, records of the father's genotype in 38 cases, and of these 22 are homozygous and 16 are heterozygous Rh-positive.

Illustrative Cases

Case 1.—Mrs. G.: Group A Rh-negative, rr, cde/cde. Mr. G.: Group O Rh-positive, Rh_1Rh_1, CDe/Cde. 1939: Female; alive and well; Group O, R_1r, CDe/cde. 1940: Female; alive and well; Group O, R_1r, CDe/cde. 1941: 8/12 twins; died two days, icterus gravis neonatorum. 1942: Male; died two days, icterus gravis neonatorum. 1943: Male; died two days, icterus gravis neonatorum. 1945: Male; macerated foetus; Group O R_1r, CDe/cde. The serum contained anti-Rh_0 (anti-D) titre 1:8.

This family illustrates the typical course of iso-immunization in a Rh-negative woman with a homozygous positive husband. Haemolytic disease has recurred in each child after the first appearance of the disease, and it is extremely unlikely that any normal child will be born.

Case 2.—Mrs. C.: Group O Rh-negative, rr, cde/cde. Mr. C.: Group B Rh-positive, R_1R_1, CDe/CDe. 1931: Miscarriage 2½ months. 1932: F.; Full-time stillbirth. 1934: Miscarriage 2½ months. 1936: F.; f.-t. S.B. 1938: M.; f.-t.; lived two days jaundiced. 1945: F.; Group B Rh-positive, R_1r, CDe/cde.

The infant born by Caesarean section showed extreme anaemia and mild hydrops. A slow transfusion of 180 ml. of Rh-negative blood was begun within 15 minutes of birth, and the infant was apparently well for about 36 hours in spite of fairly severe jaundice. It then became dyspnoeic and died suddenly. Necropsy showed severe erythroblastosis and pronounced kernicterus involving all the nuclei of midbrain and medulla, the olivary nuclei being most deeply stained.

Case 3.—Mrs. S.: Group O Rh-negative, rr, cde/cde. Mr. S.: Group O Rh-positive, heterozygous R_1r, CDe/cde. 1st: F.; f.-t.; a. and w. 2nd: M.; induced two weeks before term; a. and w.; Group O Rh-negative, cde/cde. 3rd: F.; foetus malformed; I.G.N.; died third day. 4th: F.; induced two weeks before term; a. and w.; Group O Rh-negative, cde/cde. 5th: F.; S.B.; hydramnios; jaundiced. 6th: Hydramnios; premature S.B.

This patient's serum contains a weak agglutinating antibody of type anti-Rh_0 (anti-D). It is noteworthy that both of the children surviving after the firstborn are Rh-negative and presumably have escaped haemolytic disease in consequence of their lack of Rh antigen.

Case 4.—Mrs. Ma.: Group A_2 Rh-negative, rr, cde/cde. Mr. Ma.: Group O Rh-positive, R_2, presumably R_2R_2, cDE/cDE. 1st: a. and w.; A_2 R_2r, cDE/cde. 2nd: a. and w.; A_2 R_2r, cDE/cde. 3rd: a. and w.; not tested. 4th: F.; a. and w.; A_2 R_2r, cDE/cde. 5th: F.; f.-t.; congenital anaemia; Group O R_2r, cDE/cde.

The mother's serum contained a powerful anti-Rh_0 agglutinin, titre 1:512; this was also present in the breast milk (titre 1:64). The baby appeared normal at birth (Hb 116%) and there was no erythroblastaemia. On the fifth day the infant was slightly jaundiced and was losing weight; its haemoglobin had fallen to 78%. Breast feeding was stopped. The haemoglobin continued to fall, and after four weeks the mother brought the child back to the clinic on account of pallor. Its haemoglobin level was then only 26%. A slow transfusion of 180 ml. of Group O Rh-negative blood was given as packed cells resuspended in 90 ml. of saline, and thereafter the child made a good recovery. The ingestion of anti-Rh in the breast milk may have aggravated the condition, and gain in weight began only after the breast feeding was stopped.

Case 5.—Mrs. A.M.: Group A Rh-negative, rr, cde/cde. Mr. A.M.: Group O Rh-positive, probably Rh_2Rh_2, cDE/cDE. 1st: 3/12 miscarriage. 2nd–10th: All a. and w.; all A_1 R_2r, cDE/cde. 11th: 3/12 miscarriage. 12th: F.; a. and w.; A_1 R_2r, cDE/cde. 13th: 3/12 miscarriage. 14th: F.; premature; I.G.N.; Group A_1 R_2r, cDE/cde.

In this remarkable family after an initial miscarriage the Rh-negative mother bore 9 successive normal Rh-positive children, and only at the 14th pregnancy was haemolytic disease recognized. Since all the children are type R_2r it is highly probable that the father is homozygous R_2R_2. The baby was seen only on the fifth day, when jaundice was already pronounced, but after a transfusion of 100 ml. of Rh-negative blood gradual improvement took place and subsequent progress was satisfactory.

Case 6.—Mrs. H.: Group A_1 Rh-negative, R′r, Cde/cde. Mr. H.: Group A_1 R_1r, CDe/cde. 1st: M.; f.-t.; a. and w.; A_1 R_1r, CDe/cde. 2nd: M.; f.-t.; d., I.G.N.; presumably R_1r or R_1R'. 3rd: M.; f.-t.; d., I.G.N.; presumably R_1r or R_1R'. 4th: M.; f.-t.; a. and w.; A_1 R′r, Cde/cde. 5th: M.; f.-t.; a. and w.; A_1 rr, cde/cde. 6th: M.; f.-t.; a. and w.; A_1 rr, cde/cde. The maternal serum contained a weak anti-Rh_0 agglutinin.

This family illustrates well the segregation of Rh genes. The mother lacks component D, and became iso-immunized by the D antigen of the first child, so that the second and third children died of icterus gravis, while the fourth and fifth children, who lacked antigen D, escaped the disease. This case illustrates the danger of including R′ in the Rh-positive class. If this patient were transfused with Rh-positive blood type R_1 or R_2 she would experience severe and possibly fatal haemolytic reaction.

Cases of this kind have been reported by Wiener (1945b) and by Simmons and Kelsall (1945) as examples of iso-immunization of Rh-positive mothers. In my view they ought to be classified as Rh-negative.

Case 7.—Mrs. G.: Group A_1 Rh-negative, rr, cde/cde. Mr. G.: Group A_1 Rh-positive, R_0r, cDe/cde. 1st: F.; a. and w.; A_1 R_0r, cDe/cde. 2nd: M.; a. and w.; A_1 R_0r, cDe/cde. 3rd: F.; a. and w.; O rr, cde/cde. 4th: F.; f.-t. S.B. 5th: M.; premature S.B. 6th: F.; premature (5½ months) S.B.; hydrops foetalis; Group A_1 probably R_0r.

The sixth pregnancy terminated with a severe concealed accidental haemorrhage, for which the patient was admitted to hospital as an emergency. No urine was obtained

catheterization. A blood transfusion (Group A Rh-positive) was followed by a severe rigor and delivery of a stillborn hydropic foetus weighing 2 lb. 12 oz. (1.35 kg.). The placenta weighed 2 lb. 2 oz. (0.96 kg.). Anuria persisted and death occurred five days later. Necropsy revealed bilateral cortical necrosis of the kidneys and extensive anterior pituitary necrosis.

The mother's pre-transfusion serum was later found to contain anti-Rh_0 agglutinins; these diminished greatly after transfusion, but the titre had risen again before death. The baby's cells appeared to be Rh-negative, but it is almost certain that they were really R_0r (cDe/cde) with the D antigen rendered unrecognizable by the action of blocking anti-D substance.

The father and two of the children are of this rare type, so that in the absence of the components C and E the blocking of D rendered the cells serologically Rh-negative.

Case 8.—Mrs. Fl.: Group O Rh-negative, rr, cde/cde. Mr. Fl.: Group O Rh-positive, R_1R_1, CDe/CDe. Baby Fl.: Group O, apparently R′r; I.G.N. (?Cde/cde.)

The child suffered from haemolytic disease type II, but its cells were not agglutinated by the mother's serum or by any anti-Rh_0 (anti-D) serum; agglutination was obtained with anti-Rh′ sera (anti-C), and the cells accordingly appeared to belong to type Rh′—a finding which not only failed to explain the haemolytic disease but also conflicted with the rules of inheritance. The child was transfused with Rh-negative blood and made a good recovery from haemolytic disease; when tested three months later the cells were found to be of type R_1r CDe/cde, as had been suspected.

The mother's serum failed to agglutinate saline suspensions of known Rh-positive cells by the normal titration method, but caused agglutination when mixed with undiluted Rh-positive blood. Known Rh-positive cells after treatment with saline dilutions of maternal serum were found to be insusceptible to the action of known anti-D sera; it is therefore certain that Mrs. Fl.'s serum contained a pure blocking anti-D antibody which, by saturating the receptors of the child's red cells, had rendered them temporarily Rh-negative. This is probably the explanation of the finding of Rh-negative (R′) cells in cases 59 and 78 in the series of Plaut, Barrow, and Abbott (1945).

Case 9.—Mrs. Sm.: 23; Group O Rh-negative, rr, cde/cde. Mr. Sm.: Group O Rh-positive, R_1R_1, CDe/CDe. 1st: a. and w. 2nd: I.G.N.; recovered, but suffered from kernicterus and is backward. 3rd: Group O R_1r, born by Caesarean section; transfused immediately through umbilical vein, 150 ml. Rh-negative blood; became severely jaundiced, but recovered; Hb fell to 55% at 5 weeks of age; a second transfusion given with great improvement. Infant fed on heated breast milk obtained by expression.

The mother's serum contained an anti-Rh titre, 1 : 16. This child was almost certainly saved by immediate transfusion.

Case 10.—Mrs. B.: Group O Rh-negative, rr, cde/cde. Mr. B.: Group A Rh-positive, R_2, probably cDE/cDE. 1931: F.; f.-t.; a. and w.; Group O R_2r, cDE/cde. 1932: F.; f.-t.; a. and w.; Group O R_2r, cDE/cde. 1934: F.; f.-t. S.B. 1935: F.; f.-t. S.B. 1936: M.; f.-t. S.B., jaundiced. 1937: F.; f.-t.; born jaundiced but recovered; A R_2r, cDE/cde. 1938: M.; f.-t.; a. and w.; O R_2r, cDE/cde. 1941: 6/12 miscarriage. 1945: F.; hydramnios; accidental haemorrhage; macerated hydropic foetus.

This case presents several remarkable features. The history strongly suggests that the stillbirths of the third, fourth, and fifth children were due to haemolytic disease; the sixth child, although jaundiced, recovered, but the seventh child did not appear to be affected; the sixth and seventh children are Rh-positive. Three years later the eighth pregnancy miscarried, and four years thereafter the ninth pregnancy ended in the birth of a macerated hydropic foetus, following severe accidental haemorrhage, for which transfusion of plasma was given.

When the maternal serum was tested six days after delivery a powerful anti-Rh_0 (anti-D) was found, which gave agglutination in saline dilutions up to 1 : 1,600. Four days later a pint (568 ml.) of blood was removed for use as a reagent; but, surprisingly, this sample, while failing completely to produce agglutination in full strength, gave a marked prozone effect, agglutination appearing at 1 : 128, increasing to 1 : 512, diminishing at 1 : 800, and vanishing at 1 : 1,200.

Case 11.—Mrs. He.: Group A Rh-negative, cde/cde. 1935: F.; f.-t.; a. and w. 1937: F.; f.-t.; a. and w. 1941: F.; f.-t.; a. and w. 1945: Termination of pregnancy by abdominal hysterotomy on account of *severe toxaemia.* The foetus was thought to be hydropic and the placenta was unduly large. Subsequently the blood was examined and found to be Rh-negative, with a moderately good anti-Rh_0 titre, 1:16. Had this patient been given a transfusion of Rh-positive blood the effects might have been disastrous.

Case 12.—Mrs. McR., aged 39: Group A Rh-positive, Rh_1rh. Mr. McR.: Group A Rh-positive, Rh_1Rh_2. 1936: f.-t.; unexplained S.B. 1938: f.-t.; jaundiced at birth, lived 24 hours. 1942: f.-t.; a. and w. 1944: f.-t.; jaundiced at birth, lived 24 hours. 1946: f.-t.; a. and w. Group A Rh_1rh. The patient's serum was tested at intervals during her last pregnancy, and a trace of anti-E agglutinin was detected, but the titre did not alter. In view of the history of two neonatal deaths, and also because she lived in the Outer Hebrides, the patient was transferred to Glasgow by air for confinement in the Glasgow Royal Maternity Hospital. Arrangements were made to transfuse the infant, if its genotype included Rh_2 (i.e., Rh_1Rh_2 or Rh_2rh), with blood of type Rh_1 or Rh-negative (rhrh), but examination of the cord blood sample immediately after birth showed the genotype to be Rh_1rh and therefore likely to be unaffected; there was no erythroblastaemia, and the infant remained well without treatment.

The Pathogenesis of Haemolytic Disease

If we take into account both agglutinating and blocking antibodies the majority of the mothers of infants suffering from haemolytic disease are found to show evidence of iso-immunization. All recent investigations have confirmed that iso-immunization of the mother is the fundamental cause of haemolytic disease. In some cases agglutinating antibodies are found, in others agglutinoids or blocking antibodies; and in a proportion in which neither of these can be demonstrated the infant's red cells are observed to be sensitized when the Coombs test with rabbit anti-human-globulin serum is applied (Coombs, Mourant, and Race, 1946).

In our series of 114 cases of haemolytic disease 98 of the mothers have been found Rh-negative, and 86 of these had antibodies. Among 16 Rh-positive cases only two had antibodies recognizable by the ordinary saline-dilution method, but most of these were encountered before the recent more sensitive methods, such as Diamond's slide test or Wiener's "conglutination" test, were known. It is probable that the more sensitive methods would have raised the number with recognizable antibodies still higher.

It is reasonable to suppose that the passage of these harmful substances through the placenta and consequent damage to the haemopoietic system of the foetus constitute the fundamental pathology and that, as Parsons, Hawksley, and Gittins (1933) first maintained, it is essentially a haemolytic disease. The iso-antibodies so far revealed are mainly concerned with agglutination, and haemolysins acting in association with complement *in vitro* have not been demonstrated. There is reason to suppose that the "blocking" antibodies are even more harmful than the Rh agglutinins first observed; they generally appear in the later-affected pregnancies, and their appearance is often followed by the birth of a macerated hydropic foetus. Diamond and Denton (1945) refer to them as the "mature" type of antibody and to the simple agglutinins as the "immature" type. Much is still obscure about the mode of action of blocking antibodies *in vivo* and the production of such dramatic results immediately after birth. The absence of jaundice at birth in most of the affected infants may be explained by the excretion of the excess of foetal bilirubin through the placenta, and it may be that other harmful substances produced by the interaction of foetal antigens and maternal antibodies are also excreted by this route so long as the foetus is *in utero.* With the establishment of independent existence at birth, such "toxic substances" might perhaps accumulate and attain a concentration sufficient to damage the foetal tissues. Certainly many infants show severe liver damage and the occurrence of cerebral necrosis with kernicterus is well recognized.

Time of Occurrence of Haemolytic Disease in Affected Families

Haemolytic disease rarely appears in the first pregnancy; in some the second conception is affected, but in others several healthy children are born before the disease declares itself, as has been illustrated in the cases presented. In our 98 affected families with Rh-negative mothers the average parity of the

mothers when the disease first appeared was 3.2 in families with hydrops foetalis, 3.6 in families with icterus gravis, and 4.8 in families with congenital anaemia. Average figures, however, give only an imperfect view of the facts, for the range of variability is remarkable. Thus in only four families was haemolytic disease proved in the first pregnancy, and one of these was a dizygotic twin pregnancy. On the other hand, we have numerous records of families, such as No. 5 (above), in which haemolytic disease appeared only after ten or more pregnancies; and I have previously (Cappell, 1944) recorded data showing 37 Rh-negative multiparae who had lost not a single child; these included two mothers with Rh-positive husbands and 13 and 14 living children respectively.

It is difficult to say at which conception haemolytic disease first occurred, for in many families one or more miscarriages are recorded before the existence of haemolytic disease is proved. Where a succession of miscarriages culminates in icterus gravis or hydrops foetalis the earlier disasters may also have been due to the same process. In other cases one or more normal Rh-positive children are born between the early miscarriages and the frank haemolytic disease, which then seems a less probable cause for the miscarriages. I have not personally encountered a single case where a normal healthy Rh-positive child has been born to a Rh-negative mother after haemolytic disease has been proved in her earlier offspring; but families such as No. 10 in the above series are very striking, and it is difficult to avoid the conclusion that the third, fourth, and fifth foetuses suffered from fatal haemolytic disease. The sixth was affected but recovered, and while the seventh appeared to escape harm, it may have suffered from anaemia which was not detected.

However suggestive these histories may be, it is well to point out that the cause of death in the earlier infants was not fully ascertained, as post-mortem examinations were not made. Dr. Stanbury (Leeds) and Dr. Chown of Winnipeg have both encountered cases where a healthy unaffected Rh-positive child was born to a Rh-negative mother who had previously borne a child with severe haemolytic disease, but the ABO groups of mother and family are not available to enable an assessment of the influence of homo- or heterospecific pregnancy.

We do not yet know why some Rh-negative mothers react so quickly to the Rh antigen of the foetus while others appear to ignore it, but clearly there are important factors concerned other than the mere Rh difference between the father and mother. The observation that the transfusion of Rh-positive blood into Rh-negative recipients may also fail to excite any immunological response indicates that individuals vary greatly in their capacity to respond to the Rh antigens. There is some evidence that this aptitude to become immunized may also be an inherited character (Race).

Influence of Heterospecific Pregnancy

We have long suspected that iso-immunization in pregnancy against the Rh factor occurs more often when the ABO group of the foetus is compatible with the mother's blood than when it is incompatible. Such an incompatibility is designated "heterospecific pregnancy," and may be expected to occur in normal families in about 20 of every 100 random matings. To ascertain the influence of heterospecific pregnancy we require the ABO groups of mother and child, but where the child's group is unknown, as is likely to occur in stillbirths and miscarriages, the father's group may be helpful. When the father belongs to Group O he cannot transmit an ABO antigen which the mother lacks, and, also, if his ABO group is the same as the mother's the pregnancy is bound to be homospecific. From our first series of 50 well-authenticated cases of haemolytic disease it appeared that the Rh-positive child of a Rh-negative mother was more likely to be affected with haemolytic disease where the father's ABO group was compatible with the mother's than where it was incompatible; but satisfactory analysis was impossible owing to the gaps in our information due to the absence of so many of the fathers on service. The recent figures of Plaut, Barrow, and Abbott (1945) show a significant deficiency of Group O mothers and an excess of Group A mothers, whereas among the husbands there is an excess of Group O and a deficiency of Group A. Further analysis of their table shows that, among 103 families for which sufficient data are given, 92 pregnancies were homospecific and only 11 heterospecific, and of these no fewer than 7 were in Rh-positive mothers.

The figures for our own cases in proved Rh-negative mothers 90 in all, in which the groups of mothers and children are known or in which a heterospecific pregnancy is known to be ruled out by the father's group, show a striking deficiency of heterospecific pregnancies among the Rh-negative mothers—viz., only 8 heterospecific to 82 homospecific, whereas the expected random distribution among 90 pregnancies would be approximately 18 and 72 respectively.

The meaning of this difference in susceptibility is not at all clear. Wiener (1945c) has also observed the difference in incidence, and suggests that it may be due to what he terms the "competition of antigens." In a heterospecific pregnancy, if the Rh-negative maternal tissues are subjected to the influence of A or B substances as well as Rh, Wiener suggests that A and B are better antigens and that the development of anti-A or anti-B takes precedence over the development of anti-Rh. Smith (1945) has shown that in heterospecific pregnancy the maternal iso-agglutinin corresponding to the incompatible group of the infant rose in 40 out of 46 cases, and that in the six cases in which a rise failed to occur the infant was found to be a non-secretor. This suggests that the rise in maternal iso-agglutinins may be due to the diffusion of soluble A or B substance from the foetus into the maternal circulation, and that escape of foetal red cells is not usually concerned. The relative absence of soluble Rh substance in the plasma has, however, led to the general acceptance of the view that escape of foetal red cells into the maternal blood is the probable mechanism of iso-immunization against Rh. Diamond (1945) has shown that rapid and powerful regeneration of anti-Rh substances may be induced in previously iso-immunized volunteers whose agglutinin titres had fallen by repeated intravenous injection of minute doses (0.01–0.05 ml.) of human red cells of the appropriate type, and this has been confirmed by Callender and Race (1946) and by Stanbury (1946). It is clear, therefore, that repeated minute doses may be effective, and pregnancy offers conditions in which the antigen may have prolonged access to the recipient. Stratton (1943) has shown that Rh antigens are present in the red cells of a 48-mm. human embryo, and Dr. McFarlane and I have confirmed that the cells of several foetuses of 10 to 12 weeks' gestation were strongly Rh-positive. The Rh factor is therefore well developed at a period of gestation when the A and B agglutinogens are as yet imperfectly formed. Clearly, however, heterospecific pregnancy in a Rh-negative mother does not give absolute protection against the development of Rh antibodies—e.g., family 2 above. We have shown that when the mother is of Group O Rh-negative and the husband of Group A or B Rh-positive haemolytic disease is encountered less often than is to be expected on the frequency of these matings. In affected families, however, when the husband is heterozygous for A or B—i.e., genotype AO or BO—it is not apparent from published work that the incidence of haemolytic disease is any greater among the O children than among the A or B children. Few of the family studies, however, give enough details to enable a proper estimate of the situation to be made.

Management of a Case of Haemolytic Disease

It is convenient to consider this problem under two heads: (*a*) when a child is affected in a family already known to be afflicted with haemolytic disease, and (*b*) when a child born alive develops icterus gravis or congenital anaemia without previous warning of this possibility.

(a) Procedure when Haemolytic Disease is Anticipated

When a child has been shown to suffer from one of the forms of haemolytic disease—e.g., hydrops foetalis, icterus gravis, or congenital anaemia—in addition to such steps as may be necessary to save the child, if alive, information should be collected in anticipation of a repetition of the disease in future pregnancies. Much of this information will be gathered if treatment of the affected child is undertaken, but where the child is stillborn or dies, it is still important to prepare for the future by examining the blood of the mother and father for

their ABO group and Rh factor, and for the presence of anti-Rh in the mother's serum. Assuming that the mother is Rh-negative and the father Rh-positive, as is likely in a true case of haemolytic disease, the genotype of the father should be determined if possible. If he belongs to phenotype Rh_1 (70%) it can be shown whether he is homozygous (Rh_1Rh_1 or Rh_1Rh_2) or heterozygous (Rh_1rh); if, however, he belongs to phenotype Rh_2 (15%) the distinction between the homozygous Rh_2Rh_2 and the heterozygous Rh_2rh can be made only by Mourant's serum (anti-e), with which the homozygotes are negative. Supplies of this serum are unfortunately not generally available. If the father is homozygous all subsequent children are likely to be affected; if heterozygous, each pregnancy has a 50% chance of resulting in a Rh-negative foetus which will not suffer from haemolytic disease.

When the mother again becomes pregnant her serum should be examined at monthly intervals from the sixth month onwards; if anti-Rh agglutinins are present a rising titre suggests that the foetus is Rh-positive and will be affected, but failure of the titre to rise does not mean that the foetus is unaffected, and in some the anti-Rh agglutinins disappear owing to the development of the blocking form of the antibody. This is usually a serious prognostic sign, and is often followed by the birth of a hydropic infant or macerated foetus. A sample of maternal serum is preserved in readiness to perform cross-matching tests in case the mother herself should require a transfusion, for the consequences of giving an incompatible blood are likely to be very serious. Arrangements should be made to have readily available Rh-negative blood of the appropriate group or of Group O, and to give the child a transfusion within the first few hours if it should prove to be affected.

If the foetus suffers from the most severe form of haemolytic disease—viz., hydrops—the pregnancy will probably terminate prematurely in the birth of a macerated hydropic foetus, and the large size and unhealthy appearance of the placenta will probably attract attention. With icterus gravis, however, the outlook is more favourable, and the pregnancy usually goes to about full time.

In some families there is a history of repeated intrauterine deaths between the 37th and 40th weeks, and it is therefore tempting to induce labour a few weeks before term in the hope of securing a living child. We have observed, however, that affected infants are unduly prone to intranatal death from asphyxia, and it is therefore essential that induction should not be followed by a prolonged labour. Where the mother is desperately anxious to secure a living child Caesarean section about the 37th week and immediate transfusion of the affected infant probably offer the best chance.

It is rarely possible to say from the external appearance of the infant at birth whether it is normal or affected, but in the latter we have observed that the umbilical cord may look abnormally yellow; jaundice is only occasionally present at birth, as during foetal life the excess bilirubin derived from haemolysis is excreted through the placenta and is removed by the maternal circulation. Discoloration of skin and mucosae usually appears within a few hours; petechial haemorrhages in the skin also develop, and sometimes haemorrhagic manifestations dominate the clinical picture. It is of the utmost importance not to wait until clinical signs of the disease appear, but to try to establish the diagnosis immediately and institute treatment without delay. As soon as the umbilical cord is cut a sample of blood is collected from the maternal end into a sterile bottle containing anticoagulant, preferably heparin. When centrifuged immediately, the supernatant plasma is, in affected infants, usually jaundiced to a pronounced degree, and this is a valuable sign which can easily and quickly be detected without waiting for clinical evidence of jaundice. Care must be taken to prevent admixture of the cord blood with Wharton's jelly, as this interferes with agglutination; contamination with maternal blood must of course be avoided. When there is a clear history of haemolytic disease in a previous child it is probably wisest to establish at once whether the child under consideration is Rh-positive, and if so, on the assumption that it will be affected, a transfusion should be given immediately, without delaying until the results of the full blood examination are known. These can be carried out at leisure on its heparinized cord blood.

(b) Procedure when a Child Develops Icterus Gravis without Previous Warning

Haemolytic disease should be suspected when jaundice appears within a few hours of birth, though it may be delayed up to 48 hours. Physiological jaundice, on the contrary, rarely appears earlier than 48 hours, but no absolute time limits can be laid down. Rapidly deepening jaundice accompanied by drowsiness and failure to feed satisfactorily is highly suspicious, and if the child is at home it should be sent into hospital as an emergency case for diagnosis and treatment. Along with the child 10 ml. of the mother's blood must be sent to the hospital to establish whether she is Rh-negative and what kind of anti-Rh is present, as this determines what sort of blood should be transfused into the child. If cord blood is not available a sample of the child's blood should be taken from a heel puncture; the haemoglobin estimation, red and white cell counts are performed; and films are made. A few drops of the blood are also used to make a suspension in 3 ml. of glucose–citrate saline for grouping and Rh tests.

In the laboratory the bloods of mother and child are grouped and Rh tests are started at once. The mother's serum is also put up against a panel of known Rh-positive and Rh-negative Group O cells, and against the infant's blood if the ABO groups permit. If not, the α and β of the maternal serum are neutralized by the addition of one part of boiled saliva from an A_1B secretor to two parts of maternal serum, and after fifteen minutes the mixture is set up with the infant's cells. Tested saliva should be kept on hand in the laboratory for this purpose.

In haemolytic disease the haemoglobin is usually, but not invariably, below the normal birth level, the red cells are reduced, but reticulocytes are abundant. The nucleated cell count is often over 20,000, but nucleated red cells may comprise the majority and are of all kinds; normoblasts, megaloblasts, and primitive cells are all present. We regard the occurrence of primitive cells as especially significant, and while a nucleated red cell count of over 6,000 is usually an indication of haemolytic disease, lower figures or even an absence of erythroblastaemia do not rule out this diagnosis. By the time the counts have been done and the films examined the Rh tests can usually be read. If there is a history of proved haemolytic disease in a previous child the finding that the infant under consideration is Rh-positive from a Rh-negative mother is a definite indication for immediate transfusion, since it is highly improbable that a subsequent Rh-positive child will remain unaffected. If, on the other hand, the child under consideration is the first to be suspected, we require additional proof, clinical or haematological, of haemolytic disease before instituting treatment. This is important; for the development of routine antenatal Rh-testing will reveal many Rh-negative mothers whose infants will prove to be normal. Confirmatory evidence is found in the occurrence of erythroblastaemia, of rapidly deepening and severe jaundice, or of pronounced anaemia, but the absence of any of these signs does not controvert the diagnosis. Caution is necessary, for so-called physiological icterus may occur in the Rh-positive children of Rh-negative mothers and, as usual, is without grave significance; it does not require treatment by transfusion.

Treatment of Haemolytic Disease of the Newborn

With better understanding of the aetiology of haemolytic disease the rational treatment is clearly the transfusion of blood which is not susceptible to the action of the maternal iso-antibodies, and in most institutions this has improved the prognosis greatly. Accordingly, in about 90% of cases Rh-negative blood of a homologous group or of Group O is required, and should be given in amounts up to 150 ml. More than this quantity in a single transfusion is inadvisable, and the blood should be administered slowly, preferably as a drip by a gravity method rather than by a two-way syringe, as this commonly leads to too rapid administration. The dangers of rapid transfusion and consequent circulatory overloading are not sufficiently realized; the normal blood volume of a 7-lb. (3.175 kg.) baby is about 250 ml., and 150 ml. to a newborn infant is roughly equivalent to three litres to an adult; yet it is not uncommon to find that paediatricians administer 150 ml. or more in 15 to 20 minutes by a two-way syringe method. The infant with haemolytic disease generally shows considerable

hypertrophy of the heart, and it is hardly surprising that acute cardiac failure from circulatory overloading sometimes leads to death at the end of a transfusion by this method. It is preferable, therefore, to give only a moderate quantity of blood, and to repeat the transfusion later if necessary.

Experience has led me to believe firmly in early transfusion; it is a mistake to await the onset of symptoms, and transfusion should be administered at the earliest possible moment, giving 120 to 150 ml. of Rh-negative blood of the child's group or of Group O. The absence of marked anaemia is not an indication for withholding transfusion, for a high haemoglobin and red cell count may be an expression of excessively active haemopoiesis from abundant extramedullary centres. If the clinician is afraid of plethora from the administration of 150 ml. of blood to an infant whose haemoglobin level is 120%, it is worth removing blood from the infant before transfusing with Rh-negative blood. For this reason where the disease is anticipated no attempt should be made to secure the return of blood from the placenta to the baby, but the cord is clamped as soon as possible to prevent the reflux of placental blood. The rationale of administering a relatively large transfusion to the non-anaemic infant is that the Rh-negative blood persists unaffected by the irregular antibodies, and thereby helps to inhibit rapid regeneration of the infant's own Rh-positive and therefore susceptible cells. By thus suppressing haemopoiesis the severity of the jaundice is diminished and the risk of severe liver damage and of kernicterus seems to be lessened. When transfusion has been carried out within the first 24 hours the jaundice may fail to deepen and may disappear more rapidly than in infants transfused only later.

We prefer the intravenous route, using the internal malleolar vein, but do not cut across or tie off the vein; a limited experience of intramedullary transfusion of blood has not been very encouraging. The infant's Hb level is watched daily, and sometimes a second transfusion is necessary after a few days, for by this time a large part of the child's own Rh-positive blood may have been destroyed, so that life is maintained on the Rh-negative transfused cells. Two transfusions have usually sufficed, but in infants not transfused until the fourth or fifth day more may be required. It cannot be too strongly emphasized that speed in diagnosis and treatment is essential if the best results are to be obtained, and that the longer transfusion is delayed the greater the chance that it will have to be repeated. No other treatment is usually necessary. Where laboratory facilities for carrying out the tests are properly organized the tests can be completed and the transfusion begun within an hour.

In a family previously affected but with a heterozygous father, examination of the infant's blood may show it to be Rh-negative (rr, cde/cde). In this event treatment is unnecessary, since there is no reason to suppose that a Rh-negative child will be affected. Our experience here has been perfectly clear. In a study of 650 antenatal cases Dr. McFarlane observed 90 Rh-negative mothers, 31 of whom gave birth to normal Rh-negative children, including two Rh-negative normal children in families whose previous Rh-positive children had been affected. She also examined, soon after birth, the blood of 52 Rh-positive children from the same group of Rh-negative mothers without a previous history of haemolytic disease; 48 of these were normal and no treatment was given, but 4 were found to suffer from haemolytic disease and were immediately treated. All survived and have remained well.

It must be remembered that occasionally an affected child will appear to be Rh-negative owing to the saturation of the D receptors of its erythrocytes by "blocking" antibody. Tests with anti-C and anti-E serum will make the child seem to belong to the R′ or R″ subgroup, but in such cases the Coombs test with rabbit anti-human-globulin serum reveals that the infant's cells have been sensitized by the action of the maternal antibody *in vivo*.

If anti-Rh agglutinins are present in the mother's blood they will also be excreted in the milk, but at somewhat lower titre. It is not advisable to allow the infant to suckle the breast, but if the mother's milk is abundant it may be withdrawn by pump, heated to destroy the agglutinin, and fed to the child. After a few weeks the agglutinin content usually falls to such a low level in the milk that it ceases to be dangerous and breast feeding may then be allowed.

After the first recognition of haemolytic disease in a family the blood of the father should be investigated for the Rh factor to determine whether he is homozygous or heterozygous for Rh. On this depends the future prognosis—a matter about which the parents are often more anxiously concerned than about the fate of a child recently lost. In our experience, parents are often ready to face the 50% chance of a normal child, but are less ready to produce a child if they know that haemolytic disease is almost inevitable. Where the father is known to be homozygous the prognosis is bad; a large number of subsequent pregnancies terminate in miscarriage or premature birth of a macerated foetus, for which no prophylactic treatment is of any avail. One cannot comfort the parents beyond expressing the hope that transfusion may save a proportion of such children if they are born alive, but the dread sequel of kernicterus must also be borne in mind, for in some cases it occurs in spite of early and repeated transfusion.

Haemolytic Disease where the Mother is Rh-positive

In about 10% of cases of haemolytic disease the mother is Rh-positive. There is no proof that there is any cause of this disease other than iso-immunization, and in such cases the aetiology usually lies in iso-immunization against one of the elementary Rh antigens which the mother herself lacks, but occasionally incompatibility of the ABO groups may be concerned. It is also certain that there are hereditarily transmitted red cell antigens other than those of the ABO, MN, P, and Rh systems, and on rare occasions such factors may be responsible for iso-immunization, but knowledge of these is still fragmentary (Callender and Race, 1946).

Two clearly defined types of iso-immunization in Rh-positive mothers may, however, be recalled—viz., the production of iso-antibodies of type anti-E (anti-Rh″) by mothers of genotype Rh_1rh (Boorman, Dodd, Race, and Taylor, 1944) and the development of sera such as St (anti-c) by mothers of genotype Rh_1Rh_1 (McCall, Race, and Taylor, 1944). In the 10% of Rh-positive mothers of affected infants, however, such antibodies are only rarely detectable, and failure to demonstrate iso-antibodies is the rule. In the majority of cases the husbands' blood groups are such that iso-immunization is theoretically possible. Thus in 12 of our 16 cases of haemolytic disease in Rh-positive mothers for whom sufficient data are available the father's blood contained a Rh antigen absent from the mother's cells in 8, and in four of these also an incompatible A or B antigen. In the four remaining cases without demonstrable Rh incompatibility the pregnancy was heterospecific in three, and in the fourth case, where both parents were Group O Rh_2rh, the mother's serum contained an unknown irregular agglutinin (Cappell, 1944; Case 10) acting on the cells of the husband and affected child. In one other case the mother's serum contained an unknown irregular agglutinin, but in the remaining 14 cases irregular iso-antibodies could not be detected. In two cases of heterospecific pregnancy, the mothers being of Group O and the baby of Group A, the maternal anti-A titre was unusually high in one (1 : 2,048), and in the other an active haemolysin was detected. Proof that the foetus suffers damage from the increase of maternal iso-agglutinins in heterospecific pregnancy is difficult, and with increased knowledge of the complexity of the Rh groups fewer cases are now attributed to this cause. It is pretty certain, however, that ABO incompatibility was responsible for haemolytic disease in the cases reported by Boorman, Dodd, and Mollison (1944), in some of the cases in Rh-positive mothers reported by Plaut, Barrow, and Abbott (1945), by Polayes and Ohlbaum (1945), and by Austin and Smith (1946).

The direct application of Coombs's anti-human-globulin serum will in future enable us to detect *in vivo* sensitization of the cells of affected infants, and the indirect test will probably reveal iso-antibodies in maternal sera which do not yield irregular agglutinins. Thus Coombs, Mourant, and Race (1946) have demonstrated *in vivo* sensitization of the cells of an infant suffering from haemolytic disease, the infant and parents being all of Group O Rh_1rh, and have shown that the mother's serum contained an unknown antibody against the husband's cells (the Kell antigen-antibody system).

In the treatment of the affected children of Rh-positive mothers the maternal blood group is the guide, and the child is given blood similar to the mother's on the supposition that

it will be unaffected by any kind of anti-Rh or other irregular agglutinin which the mother may have produced. The mother's whole blood should not, of course, be used, as its content of antibodies would aggravate the haemolytic disease. It is rational, however, to use the mother's red cells after centrifuging and thorough washing with saline to remove all traces of plasma. In most cases it is simpler to submit a sample of the mother's serum to the Blood Bank or Regional Transfusion Officer and receive a supply of carefully matched blood; but occasionally, when the nature of the iso-immunization is obscure, the use of the mother's washed red cells may be necessary to save the child. In such cases it is unimportant that the mother's cells may be of Group A or B and the child's cells of Group O; owing to the absence of the natural iso-agglutinins in the newborn child, other than small amounts derived from the mother, the maternal red cells, whatever their group, are always compatible with the serum of the child. It is very much more important to examine the mother's blood for its Rh type than the child's, for in all cases due to Rh incompatibility the infant if affected is Rh-positive. When a suspected case is sent into hospital a sample of the mother's blood must always go along with the affected infant, for if she is Rh-positive it depends upon her genotype what kind of anti-Rh she is likely to have made. Anti-d and anti-e have not yet been detected in association with pregnancy, but Rh-positive mothers have been found to make either anti-c or anti-E. Accordingly the routine transfusion of infants suffering from haemolytic disease with Rh-negative blood will occasionally fail to give the best result, for in those with anti-c such blood would be susceptible to the irregular antibody and would be less effective. It is for this reason that a sample of the mother's blood should always be sent to hospital along with the infant. The mother's serum is used to perform a careful cross-matching test with the blood to be administered to the child, both at room temperature and at 37° C., and with further experience of Diamond's open slide test this method may be helpful in detecting incompatibilities not readily demonstrated by other methods.

Summary

An account is given of the development of knowledge about the Rh blood group. The different types of human iso-antisera have been described and the consequent deductions as to the antigenic structure of the Rh factor have been pointed out. The nomenclatures applied by different workers in this field have been correlated and the need for clearer definition of "Rh-positive" and "Rh-negative" has been emphasized. While in the present state of knowledge Fisher's synthesis affords the most satisfactory explanation of the antigenic structure and mode of inheritance of the Rh group, it is suggested that Fisher's Greek letter terminology for the antibodies might advantageously be replaced by one based more directly on the hypothetical elementary antigens of the Rh complex—e.g., anti-C instead of Γ, anti-D for Δ, etc.

The types of clinical disorder resulting from iso-immunization by transfusion and in pregnancy have been presented and the pathogenesis of haemolytic disease of the newborn is discussed. Attention is drawn to the relative infrequency of haemolytic disease in heterospecific pregnancy. An outline is given of the management of a case of haemolytic disease, and the principles of treatment for the affected infant, both of Rh-positive and of Rh-negative mothers, are described.

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THE FENESTRATION OPERATION FOR OTOSCLEROSIS

BY

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Search for the solution of the problem of middle-ear deafness can be said to have begun in 1876, when Kessel demonstrated a transient improvement in hearing after extraction of the stapes. This was confirmed by other workers, and various attempts were made, by opening the labyrinth in different places, to prolong the improvement gained. The promontory was used by Kisch, and the semicircular canals by Bárány and others.

The modern operation was first suggested by Jenkins in London in 1913, for he appears to have then made an opening in the horizontal canal and covered it with a pedicle flap taken from the postero-superior wall, including the membrana flaccida. This is in principle the operation carried out at the present time. Fraser, of Edinburgh, experimented along the same lines, but he, like many other workers, was discouraged by the temporary nature of the results, and abandoned the operation on account of this and also because of the dangers involved. It was not till about 1917, when Holmgren of Stockholm started his work, that the operation was developed along modern lines and took its place as a recognized surgical procedure. To Holmgren must go the credit of having, by exhaustive and painstaking research, stimulated the interest of those surgeons who are to-day bringing fresh hope and happiness to many who have been pronounced incurably deaf. Following Holmgren a number of workers took up the study, including Sourdille in France, and Lempert, Kopetzky, and Shambaugh, to mention only three of many, in America. Owing to the exigencies of war opportunities for research have been curtailed in this country, so that the volume of work done in America has been very much greater, and large series of cases have been recorded there.

The present account records the results and impressions of ten years' work on several variations of the fenestration operation.

Principle of the Operation

The operation is believed to be applicable to cases of otosclerosis chiefly, for this disease, by causing fixation of the stapes, prevents the free movement of sound waves within the labyrinthine fluids. As the stapes becomes increasingly

immobile in the oval window the normal recoil of the fluid is impossible, and deafness of middle-ear type results. It has been found that if another opening is made in the wall of the labyrinth hearing immediately returns, presumably because the fluid within the labyrinth is again free to carry the vibrations of sound. Whether or not this will eventually be found to be the true explanation, the fact, which has been verified by every surgeon who has carried out the operation, is that at the moment of releasing the perilymph hearing returns with dramatic suddenness and intensity. It is this experience of the apparently miraculous which has encouraged perseverance in the face of repeated failure.

Selection of Patients

A great deal has been written on this aspect, and rules have been laid down for when it is justifiable to submit a patient to operation. It is quite evident that in the case of young people with only moderate hearing loss operation is the treatment of choice and should be advised, because a very high percentage of successful results can be obtained.

As age increases and other factors are introduced which tend to reduce the possibility of restoration of normal hearing, the problem of advising the patient becomes one of considerable complexity and one which cannot be solved by reference to a set of rules. The reasons which cause older people to seek help are economic, psychological, and social, and each of these factors must receive due consideration in weighing up the necessities of the case. Every worker of any length of experience in this operation has at some time or other been surprised and gratified by success when little was expected, so that it is to be doubted if anyone can state categorically whether in these borderline cases help can or cannot be given. And, further, so long as there is evidence, as there seems to be, that operation can retard or for a time prevent further deterioration of hearing, great benefit can be given to those of poor hearing by keeping them just within an economic level. We see, therefore, that there are many whom we can accept for treatment without hesitation and many whom we can judge are better served with a hearing aid, but there are also those who can be advised only after the most careful and sympathetic consideration of every aspect of their problem.

So long as these doubts and problems remain selection of a certain number of patients for purposes of observation must be made, even though it may mean that tables of results will not look as favourable as they otherwise might. For the best results the patients should be young—preferably under 25 years—there should be neither sign nor history of middle-ear disease, there should be no nerve deafness, and the hearing loss within the speech range should not be greater than forty to fifty decibels. Under these conditions the operation should give over 80% of immediate success.

Preparation and Anaesthesia

The general preparation of the patient is the same as for any major operation, while the local preparation is that used for a mastoidectomy. The only addition to the usual routine is that great care is taken to cleanse and sterilize the external auditory meatus.

The operation can be done under general anaesthesia or local analgesia, according to the preference of the operator. The advantage of local analgesia is the comparative bloodlessness of the field; the chief disadvantage is the extremely heavy premedication which is necessary if the patient is not to suffer from the very unpleasant symptoms induced by the opening of the labyrinth. The use of a general anaesthetic as the main agent gives the operator complete freedom of action and an immobile and indifferent patient, while the added tendency to bleeding can be minimized by haemostatic injection. After trying many forms of anaesthesia the one now used is morphine-atropine premedication with intratracheal cyclopropane-and-oxygen insufflation. This is varied on occasion with light ether or gas-oxygen administration, or with intravenous pentothal infusion. Anaesthesia by methods such as these can be prolonged as required without detriment to the patient.

A great deal will be found to depend upon the skill available for administering the anaesthetic, and every operator will have to suit his method to the conditions under which he works.

Apparatus

Apart from the usual instruments required for a mastoidectomy there must be a means of cutting an opening measured in millimetres, and for this a dental drill is most commonly employed. A magnification of at least three times is needed and more if possible. With the apparatus at present employed a magnification of six times and more is used, through a dissecting microscope, which allows greater power for any special part of the operation. Illumination is obtained from a lamp fixed to the microscope, and it is important that the light should be good. Irrigation, either continuous or intermittent as desired, is used to wash away any bone dust, to keep the field clear of blood, and to act as a sterile barrier between the open labyrinth and possible infection from the air.

Technique of Operation

The operation follows the lines of the modified radical mastoid procedure in the exposure of the labyrinth, except that, as suggested originally by Jenkins, a flap is cut from the posterior and superior aspects of the external meatus in such a manner that it remains attached to the membrana flaccida forming a pedicle flap with the lower edge of that membrane as its hinge. This flap is eventually turned over the attic floor and made to cover the new opening into the vestibule.

The formation of the flap is of the greatest importance; for if it is torn seriously, so that there is doubt whether the opening will be properly covered, then the operation will have to be abandoned. Happily this does not mean complete failure, for at a later date the operation can be completed as a two-stage procedure, without prejudice to the final result. The incus and the head of the malleus are removed to complete the exposure of the vestibule just as they are removed in the mastoid operation when found to be diseased.

The method of approach to the middle ear has been the subject of some discussion, but the conclusion has been formed that it is immaterial whether the post-auricular or the endaural route is used. In either approach the soft parts can be moved and manipulated to give equal access to the attic floor. The factors which control the approach are the angle which the external bony meatus makes with the drum membrane and the height of the attic roof, which as a rule is equivalent to the position of the dural plate of the middle fossa. Problems of lighting, magnification, and irrigation lend themselves more easily to solution by the post-auricular route.

After exposure of the vestibule the new opening is made as far forward on the horizontal canal, where it enters the vestibule, as the thickness of the bone will permit. The object is to make the opening over the ampulla, but as the angle of the vestibule varies within quite wide limits and the depth of the bone causes considerable variation in the position at which the new fenestra can be made, it is not possible to determine within fine limits where the opening will be made until the canal is opened. With various burrs the bone is thinned until the vestibule is defined, and finally the bony covering with the endosteal layer is fragmented and removed, exposing the membranous tube of the horizontal canal as it passes downwards into the body of the vestibule. It is customary to polish the saucer-like depression, and to remove all fragments of bone and endosteum, with specially made instruments resembling dental excavators. The removal of endosteum is probably of much greater importance than polishing, as the regeneration of bone takes origin from the endosteal layer, starting from the canal and passing forward over the roof of the vestibule. This has been seen clearly on revising fenestrae which have closed by new bone formation. It is the prevention of this closure which is the crux of the operation, as the gradual disappearance of the fistula signs usually means progressive loss of the regained hearing.

When the new opening has been made to the satisfaction of the operator the flap is spread over it, with or without the insertion of cartilage or other substance designed to prevent closure by bone. The flap is fixed by means of packs and the wound is closed as in any mastoid operation. The after-treatment follows the usual lines—that is, the first dressing is carried out after about a week and the cavity treated so as to maintain sterility and obtain the most rapid epithelialization of the cavity. Complete healing is of the utmost importance

s continued discharge or infection will go far to ruin a successful operation. Healing occurs in from six to twelve weeks—more often the latter.

Progress after Operation

In the successful cases there is an immediate and dramatic increase in hearing the moment the labyrinth is opened: this can be demonstrated when the operation is done under local analgesia. This improvement has on occasion been so great that the noise has distressed the patient and sedatives have been required until adjustment to the new conditions was achieved. In the average case the hearing deteriorates on the second or third day to its previous level, to improve again slowly up to the time when the ear is completely healed, when as a rule it is at its best.

Signs of labyrinthine disturbance are immediate from the time of opening the canal and may be severe, but they are not likely to persist for more than three days, unless the patient moves quickly. Thereafter readjustment proceeds steadily, although it varies greatly in different individuals. Some take many weeks to reach the stage of complete confidence, while others have little or no disturbance. Those accustomed to games and physical exercise have much less difficulty than those of more sedentary habits.

Other Sequelae

Apart from the effects upon hearing and balance several other interesting phenomena have been observed. Confusion of sounds is the rule, and the patient has to undergo a re-education to distinguish speech in the volume of noise with which he or she is surrounded; but in some instances this confusion becomes a complete reorientation of sound, so that there is reversal of the normal, and footsteps, street cars, and the like are heard behind the patient when the origin of the sound is in front. On occasion this may prove a frightening and disturbing experience.

Difficulty in accommodation has been a complaint on several occasions, and lack of co-ordination has been greater in some patients than could be accounted for as a normal effect of a serious operation. Happily all these effects have disappeared without any sign of permanent disability.

Causes of Failure

Failure to bring about any improvement may be due to selection of unsuitable cases. Technical failure probably plays some part, but it must be very small, for in this series there was only one case, and in this the complete failure of the electrical supply probably contributed to lack of success. Hitherto undiagnosed disease was present in one patient, in whom appearances within the labyrinth were strongly suggestive of previous inflammation. Infection of the cavity was formerly one of the most dangerous conditions so far as hearing was concerned, but since the introduction of sulphonamides and penicillin its importance has greatly diminished.

Acute otitis media has been encountered, but experience has shown that it is not necessarily disastrous. Pregnancy has occurred in several patients, and its effect has been variable: in some cases there has been a definite fall in hearing, but others have been unaffected. In all cases of late failure the most important cause has been closure of the new opening, as evidenced by the gradual disappearance of the fistula sign.

As the fistula becomes more difficult to identify the hearing diminishes, and where the fistula sign cannot be obtained the hearing as a rule has returned to its former level. To combat the closure of the fistula many expedients have been devised, particularly by Holmgren. One of the most promising suggestions is the use of a cartilaginous implant, or "stopple," and comes from Lempert of New York. My experience of this method extends to about ten months only, so I can give no opinion on the final value of this idea. The impression gained, however, of the immediate results is that they are as good as those in cases done without cartilage. As no considerable series of more than two years' duration appears to have been reported, final judgment will have to be postponed. The statement that the usual post-operative loss is lessened by the cartilaginous implant has not been confirmed here. Should, however, this method stand the test of time and experience it may well prove to be the solution to the main problem.

Results of Operation

The total number of operations performed is just over 200, and of these 118 consecutive cases have been selected for analysis. This group excludes the earliest operations and the most recent ones, for it would be of no value to include cases performed with primitive equipment in a series done with modern methods; and as it is found by experience that a certain number of patients suffer an early deterioration of hearing, those operations carried out during recent months are also excluded. Although five months is the period usually allowed, in this series more than eight months has been taken, and no case is included which has been operated upon during the year 1946.

Of the 118 cases 82 are still improved, giving a total percentage of 69. As this figure includes patients of all ages—suitable and unsuitable cases and some accepted purely for observation purposes—it means very little, and does not give a true picture of what can be done. The following table of results according to age groups is more informative:

Age	–19	–24	–29	–34	–39
Improved ..	80%	77%	70%	62%	61%

This demonstrates the diminishing probability of success as age increases. It is noteworthy, however, that in the "over 40" group a higher proportion of success has been obtained—nearly 80%—owing to very great care in selection, but as this is not representative of what can be done with the general run of cases of progressive middle-ear deafness at this age it is not included in the table.

There is no doubt that with increasing knowledge of the factors affecting success and failure, and by confining the operation to the favourable groups only, a high figure of success could be produced. To so limit the application, however, would be, at least in the present state of our knowledge, to inflict hardship upon many who might obtain benefit, while included among the failures are some who are proved by the audiometer to have remained stationary at the level at which they were before operation. This is a result of great importance to the patient in a disease which is almost always progressive.

There has been one case of facial paralysis which recovered completely, and there have been no cases of labyrinthitis. Two fatalities occurred in this series: one patient, an elderly woman, died of acute cardiac collapse shortly after the operation was completed; another, a man aged 43, died of acute morphine poisoning some hours after the operation on receiving the usual post-operative sedative. Although neither of these occurrences can be attributed to the operation itself, it must be emphasized that it carries all the dangers of a major surgical procedure and should never be embarked upon without every precaution being taken for the patient's safety.

If the patient therefore can appreciate the risks and the uncertainties involved, he alone must make the decision for or against operation. To enable him to do this all available information must be laid before him frankly and fully.

Summary

The purpose and the indications for the fenestration operation are described.

The method of carrying out the operation is briefly given and reference is made to the equipment necessary for its performance.

The effects of the operation are discussed and the results in a series of 118 consecutive cases are detailed.

It is considered probable that, with an increasing knowledge of the subject, a high percentage of successes could in suitable cases be obtained.

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PITUITARY HYPOTHYROIDISM WITH IMPAIRED RENAL FUNCTION

BY

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In 1943 Beaumont and Robertson described a syndrome called "pituitary hypothyroidism with impaired renal function." The term was applied to a patient who had signs and symptoms of thyroid deficiency and a subnormal urea clearance, impaired water elimination by the kidneys, and inability to pass a high-specific-gravity urine. So far as can be ascertained, there has been no previous record of such a syndrome in medical literature. After this syndrome was recognized, it was proved experimentally that hypopituitarism produced in dogs by ablation of the anterior lobe of the pituitary was followed by a diminution in the urea clearance (Pickford and Ritchie, 1945).

The development of hypothyroidism is dependent upon a degenerative process in the thyroid gland or a pathological condition of the pituitary body. If it be the latter, the lesion may be a neoplasm or degenerative process of the hypophysis, or secondary to a space-occupying lesion in any part of the brain. The clinical picture of the resulting hypothyroidism is one of inertia and retardation of all mental and bodily functions; the individual appears indolent and expressionless, although his intellectual capacity is only slightly impaired, if at all. The hair becomes scanty, the skin dry, the eyelids puffy, and the palpebral fissures narrow. The patient complains of being persistently cold, and his body temperature is as a rule subnormal, basal metabolism low, blood circulation retarded, blood cholesterol high, and heart enlarged (Zondek, 1944).

The first known account of pituitary hypothyroidism with impairment of renal function due to a head injury is reported below, together with a differential diagnosis and discussion.

Case Record

A soldier aged 23 was wounded with shrapnel on Feb. 15, 1945. The shrapnel produced a large right fronto-temporal skull defect, destroyed most of the underlying frontal pole of the brain, and rendered him deeply unconscious, mentally confused, or disorientated in time and space for four months. Shortly after he became cognizant of his whereabouts his intellectual capacity was above the average, but his mental processes were retarded and he lacked initiative and interest in his surroundings. He preferred to sit in a hot atmosphere to get warm rather than to lead an active existence. His general health was fairly good, but his appetite was poor, and his weight fell 3 stone (19 kg.) during the first few months of the illness. There was no evidence in his history of other bodily disease.

Physical examination throughout the first nine months of illness showed the following abnormal features: a temporary subnormal temperature, a right fronto-temporal skull defect which was made good with a tantalum plate on Aug. 9, 1945, and scars on the forehead, the right side of which also showed impaired sensitivity to pinprick. He had right-sided hyposmia and his right eye was absent. On the left side the eyelids were puffy and the palpebral fissure narrow. There were no other abnormal signs at the time of his discharge from hospital in December.

Tests showed that he had no albuminuria or glycosuria, and microscopically and bacteriologically his urine was normal. The specific gravity of the urine was 1004 to 1030, but was higher during the day than at night. His water secretion (Dec. 5 and 6) in two hours after drinking two pints (1.14 l.) of water was 12 to 13 oz. (340–368 ml.). In December, 1945, his urea clearance was 48% normal, and blood urea 29–35 mg. During the same month his glucose-tolerance test was normal, but his basal metabolic rate was subnormal (–21).

Differential Diagnosis

In the above case the abnormal signs, symptoms, and laboratory tests are compatible with the diagnosis of hypothyroidism due to a head wound. As there was no evidence of thyroid deficiency or any other disease prior to the localized injury to the head, an intracranial lesion involving the pituitary body is believed to be responsible for the hypothyroidism. No other intracranial lesion is known to give a similar picture.

Although pathological conditions in many parts of the body, such as heart failure, nephritis, Addison's disease, etc., may also show a low basal metabolic rate and impaired renal function, their characteristic features were lacking in the present case history, physical examination, and investigations. It is possible, however, that Simmonds's disease may have been present during the early months of the patient's illness, but certainly not later on, for at that time there was no cachexia, hypogonadism, low blood sugar, or increased sugar tolerance.

Discussion

The features in the preceding case record which require explanation are the rate of water elimination and the urea clearance by the kidneys. Investigations of these functions were made during the eighth and ninth months of the patient's illness. Between Oct. 24 and Nov. 14, 1945, the volume of each specimen of urine was measured and the specific gravity taken. The amount of urine passed in 24 hours was found to be within normal limits and the quantity secreted during the day was almost invariably less than at night, which is the reverse of normal (Kolmer and Boerner, 1938). This would suggest that the patient ate or drank between 10 p.m. and 8 a.m. As this did not occur an alternative explanation of the abnormal output of urine is that it is due partly to failure of pituitary hormonal control and to some extent to changes in posture.

The part played by hormones in the production of daytime oliguria and nocturnal diuresis in pituitary hypothyroidism is perhaps analogous to the effects of pregnancy upon renal function. In the pregnant woman the rate of urine flow is little more than half that of healthy women who are not pregnant. The blood volume in pregnancy is increased. Water is therefore presumably held by the tissues and not presented to the kidneys for excretion during the day, but at night the excess water stored in the tissues is excreted (Theobald, 1946). The hormones which could produce the diuresis are the thyrotrophic, elaborated by the anterior pituitary, and the thyrogenic, secreted by the thyroid gland (Beaumont and Robertson, 1943). As it is not possible to explain the alternating oliguria and polyuria on a hormonal basis an additional factor must be sought. The one applicable in the present case of hypothyroidism is change of posture.

The influence of posture upon urine output has been observed in normal people after they have drunk a litre of water, for they will pass an equal volume of urine quicker when they are lying than when they are standing still (Theobald, 1946). The same is not true should the individual be up and physically active. The upright posture is also partly responsible for oliguria in patients with congestive heart failure because fluid from the systemic circulation accumulates in the lower extremities as occult oedema and is not available for excretion by the kidneys (Fishberg, 1940). Therefore it is possible, and probable, that the abnormal rate of water excretion by the kidneys in pituitary hypothyroidism is due to an endocrine dysfunction and variations in posture.

As a rule a van Slyke urea-clearance test of 48% normal is due to renal disease, but in the case under discussion there is no history suggestive of illness referable to the urinary system—there was no polyuria, albuminuria, or abnormal constituent in the urine deposit. The specific gravity of the urine varied from 1004 to 1030, and the blood urea and blood pressure were normal. In view of these findings the subnormal urea clearance is almost certainly extrarenal in origin (Fishberg, 1940), and could be accounted for by pituitary hypothyroidism (Beaumont and Robertson, 1943), which was the dominating feature in this case. The action of thyroid upon the urea clearance has been demonstrated by Beaumont and Robertson (1943). They showed that thyroid administration to six myxoedematous people resulted in an improvement in their urea clearance. The fact that thyroid therapy cannot entirely remedy the impaired urea clearance in cases of myxoedema shows that an additional factor is responsible for the poor urea clearance, and it is suggested that the oliguria in the present case may play a part in producing this effect.

The third abnormality in renal function is the high specific gravity of the urine during the day and the low at night. The figures were arrived at by measuring the specific gravity of every specimen of urine passed, including those at 1 and 4 a.m. The inverted day/night ratio for the specific gravity of the

urine is in keeping with the inverted day/night ratio for urine output. Why the highest specific gravity urine was passed during the day and the lowest at night remains obscure, but the cause is probably the same as for the daytime oliguria and nocturnal diuresis.

Summary

A case of pituitary hypothyroidism with impaired renal function due to a penetrating wound of the brain is here reported. The renal abnormality consisted of a diminished urea clearance and an inverted day/night ratio for urine specific gravity and urine output.

Discussion was devoted to the abnormal renal function, which was considered to be partly due to hormonal dysfunction and partly dependent upon change of posture.

I am indebted to the Medical Director-General of the Army for permission to publish this paper and to Col. Roche, who allowed me to study the recorded case in his hospital. I would also like to acknowledge Dr. Ritchie Russell's encouragement and assistance in writing the article.

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INCIDENCE OF ULCER IN HAEMATEMESIS

BY

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It is generally accepted that the most common cause of haematemesis is peptic ulceration, either gastric or duodenal. In a series of 382 cases reported by Natvig, Römcke, and Svaar-Seljesaeter in 1943 radiographic confirmation was obtained in every case; 230 cases were of duodenal ulcer and 152 of gastric ulcer. McCrae (1938), although he gives no figures, states that "in medical practice haemorrhage from the stomach occurs most frequently with ulcer of the stomach or duodenum and from oesophageal varices."

In a small series of cases admitted to this hospital during the last three years, primarily for acute haematemesis, whatever the underlying pathology, only 7 (39%) of 18 patients were found to have radiographic confirmation of peptic ulceration.

Immediate treatment adopted in each case was along the customary well-established lines—i.e., the treatment of acute post-haemorrhagic shock. Morphine gr. 1/4 (16 mg.) with atropine gr. 1/100 (0.65 mg.), both repeated four- or six-hourly as necessary, elevation of the foot of the bed, covered hot-water bottles, half-hourly recording of the pulse rate with repeated blood-pressure estimations, blood counts and blood grouping at the earliest possible opportunity, were some of the immediate measures adopted. Small drinks of sweetened fluids were allowed in most cases if vomiting ceased soon after admission. Where it was apparent that bleeding had stopped, as evidenced by the return to normal of temperature, pulse, and blood pressure, the recognized Witts (1937) modification of the Meulengracht two-hourly dietetic regimen (so far as wartime conditions would allow) was instituted, together with full doses of iron, phenobarbitone, magnesium trisilicate and belladonna mixture, and adequate vitamin dosage. The iron was administered in the form of ferri et ammon. cit., gr. 30 (2 g.) thrice daily, and was continued long after the patient was discharged to the out-patient "follow-up" department. It is interesting to note that this quite simple medication was all that was necessary to produce the desired haemopoietic effect, and the blood picture improved steadily week by week.

All cases did well on this routine, and the average duration of treatment in hospital was about five weeks. Three months later a barium meal was taken, the patient being screened, and the radiological conclusions were as follows: chronic duodenal ulcer, 5; chronic gastric ulcer (confirmed by gastroscopy), 1; anastomotic ulcer (confirmed by operation), 1; making a total of 7 (39%). Two cases (11%) gave histories suggestive of peptic ulceration, but no radiographic evidence of this could be obtained. In these circumstances I feel it is reasonable to assume that the diet, rest in bed, and medicines were responsible for complete healing of the ulcer and subsequent negative skiagrams. Two further cases (11%) proved later to be due to cirrhosis of the liver, where it is probable that the haematemeses were the result of ruptured oesophageal varices or congestion consequent on portal obstruction. One patient in the series had hypertension with severe epistaxis, and it must be concluded that some of his haematemesis, if not all, was caused by swallowed blood.

Gastric Erosion as a Cause of Haematemesis

The most interesting proportion is that of six patients (34%) from whom no history of dyspepsia could be elicited and who were perfectly fit up to or just before the time of haematemesis. In all these cases, after an uninterrupted recovery when treated along the above lines, a later *x*-ray picture revealed a perfectly normal stomach and duodenum. Fractional gastric analyses also performed at a later date showed no gross abnormalities, although some hyperchlorhydria was recorded in one case. In the absence of any other positive clinical or pathological findings it was concluded that these must have been acute gastric erosions. Avery Jones (1944) has stated, "Of 337 patients admitted for haematemesis and melaena, over half of whom were gastroscoped usually in the first week, seven were thought to have active gastritis to account for their bleeding." Jennings Marshall (1944) has expressed the view that "haemorrhage is an occasional manifestation occurring from superficial erosions. It may be brisk but is never severe or prolonged in such cases." Our small series tends to confirm this observation in that not one of our six "erosions" required a blood transfusion.

Horace Evans (1944), in discussing the treatment of duodenal ulceration, states that "the diagnosis of duodenal ulceration is in most patients relatively easy and confirmation by *x* rays satisfactory. The frequency with which complications, such as haemorrhage, perforation, and even stenosis, occur in patients who have minimal symptoms of indigestion is surprising, though no doubt in some this is due to the ulcer being of the more acute type. This type of ulcer or superficial erosion may heal with very little residual deformity, and so reveal no *x*-ray change soon after a haemorrhage."

In such a relatively small selection of cases one can hardly regard these conclusions as being of particular significance, especially when the primary treatment of haematemesis due to acute erosion remains identical with that due to chronic ulceration. It would, however, be most instructive to learn whether the incidence of acute gastric erosion is actually as high (34% of all cases) in larger hospitals as it has been found here. The proportion of admissions for acute haematemesis in this hospital is approximately 1 in 50, and it would therefore take many years to collect a comprehensive enough series to be worthy of consideration. If this could, however, be undertaken at hospitals where the number of admissions for haematemesis is higher, further light may be thrown on this interesting observation.

I wish to thank Sir Philip Manson-Bahr, senior physician to the hospital, for permission to use his cases, and for his kindness and assistance throughout the preparation of this paper; and Dr. F. G. Wood, honorary radiologist to the hospital, for the radiological reports.

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The latest report of the Royal Hospital for Sick Children, Glasgow, states that 6,000 in-patients were treated during the year, and 70,000 out-patients, but adds that the work done was not up to what the hospital is capable of doing in normal times, with proper facilities, towards meeting the needs for medical, surgical, and specialist treatment of children in the centre and west of Scotland. "The infantile mortality rate in Glasgow is terribly high. It is the business of such a hospital as this to investigate the causes and find a cure."

Medical Memoranda

A Case of Clicking Ears

Though subjective sensations of noises in the ears are common enough, the emanation of sounds audible to others seems a phenomenon worthy of record.

Case Report

The patient, a British soldier aged 22, was sent into an Indian psychiatric hospital because of nightmares in which he flung himself about and called out for a rifle. They had occurred for twelve months, and appeared to be related to experiences under shell-fire and V1 bomb attacks in 1944. They ceased following two pentothal sessions and other psychotherapy. He also drew attention to a clicking noise which was audible to himself and others, and which he first noticed three months ago, 24 hours after a football had hit him on the cheek. The noise was heard when the observer placed his ear a few inches from the patient's; it resembled the soft crackle of an electric spark. Each click was a short distinct noise which was repeated at slightly irregular intervals at an average rate of from 24 to 32 a minute. The clicks were synchronous in the two ears, and bore no time relation to the pulse, respiration, movement of the mandible, or swallowing; the drums were never seen to move, and the clicking was unaltered when the meatal pressure was raised or during Eustachian catheterization. Major Clark, otorhinolaryngologist, examined him, and reported that the hearing, the appearance of the drums, and the Rinne and Weber tests were normal. The nasal airway was clear, though there was slight deviation of the septum to the right. The Eustachian tubes were patent. Over a period of two months' observation the sound was never absent when listened for except under pentothal or during sleep, when it ceased; the patient said that he could always hear it if he directed attention to it, though he noticed it chiefly at night. Complete physical examination and radiography of the skull were normal.

The patient gave the history that when he was 6 he developed a facial tic; he blinked his eyes, and screwed up his nose to one side. The condition lasted two years. When he was serving in B.L.A. he noticed that he was blinking excessively.

Comment

Spasmodic contraction of the stapedius or tensor tympani muscles analogous to facial tic appears the most likely cause of the phenomenon.

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A Case of Infectious Mononucleosis Requiring Tracheotomy

Shirley Smith and Shaw (1945) have reported dramatic improvements in several cases of anginous glandular fever after injection of neoarsphenamine. In the case reported below the rapid disappearance of fever, angina, and adenopathy after the injection strongly suggested a specific effect. The asphyxia attack—presumably due to oedema of the glottis—occurred twelve hours after the injection. It is felt that it may have been precipitated by a process analogous to the Herxheimer reaction.

Case Report

A previously healthy soldier aged 20 was admitted to hospital on Nov. 17 complaining of sore throat and malaise of three days' duration. On examination he was febrile but did not look unduly ill. The throat was generally inflamed, and there was a patchy exudate on both tonsils. The most striking feature was a gross enlargement of all the cervical lymph glands, producing an appearance of "bull neck." A tentative diagnosis of glandular fever was made, but it was felt that antidiphtheritic treatment should not be withheld. Accordingly, 48,000 units of antidiphtheria serum were given intravenously, and a course of intramuscular penicillin begun, with an initial dose of 50,000 units followed by 20,000 units three-hourly for three days. A throat swab taken on admission grew only non-haemolytic streptococci.

During Nov. 18 and 19 there was no response to specific treatment. Nasal obstruction developed with a mucopurulent discharge from the right nostril. The cervical lymph glands became even larger, and in addition tender glands appeared in the axillae and groins. The spleen was not palpable. Fever persisted, the temperature rising to 103° F. (39.4° C.), and the patient became restless and confused. The urine now contained a gross amount of albumin but no casts. Throat and nose swabs taken on the 19th grew only non-haemolytic streptococci. A white blood count done on the same day gave a total of 11,500 (polymorphs 58%; lymphocytes 20%; abnormal cells of mononuclear origin 22%, showing pseudopodial projections and indentation of the nucleus).

During Nov. 20 and 21 there was little change in the physical signs, but the patient's general condition deteriorated, and he became disorientated and incontinent of urine. A further blood count gave the following results: R.B.C., 5,100,000; Hb, 15.4 g. per 100 ml.; W.B.C., 15,400 (polymorphs 37%; lymphocytes 16%; abnormal cells 47%, showing a foamy cytoplasm, coarse granules, pseudopodia, etc.). On the 21st there was little change in the patient's condition. Breathing was not unduly laboured, and it was decided to give him an intravenous injection of neoarsphenamine, 0.45 g., at 5.30 p.m.; the urine then contained only a faint trace of albumin and no casts. There was no immediate reaction.

At 5 a.m. on the 22nd the patient developed respiratory distress and rapidly became completely obstructed. Emergency tracheotomy was performed by Lieut.-Col. Jelly, R.A.M.C., at 5.45 a.m., by which time breathing had ceased and the pulse was scarcely perceptible. After artificial respiration had been performed the condition of the patient rapidly improved, and within six hours he was conscious, rational, and could breathe easily past the tube. The cervical glands subsided rapidly and were noticeably softer to the touch. On the morning of the 24th the tube was removed. Temperature and pulse had dropped to normal and remained so. The throat was clear of exudate and the adenitis was rapidly resolving. Thereafter recovery was remarkably rapid and complete. Serum taken sixteen days after the onset gave a positive Paul-Bunnell reaction to a titre of 1/256/trace/512.

Thanks are due to Col. J. J. Biggam, *M.C.*, late R.A.M.C., Officer Commanding, 84 Military Hospital, B.A.O.R., for permission to publish the case, and to Lieut.-Col. A. C. Dornhorst, R.A.M.C., Officer Commanding, Medical Division, 84 Military Hospital, for his help and interest.

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Acute Appendicitis and Direct Inguinal Hernia

An acutely inflamed appendix lying in any hernial sac is a quite infrequent occurrence, but still more rare is its association with the uncommon type of direct inguinal hernia.

Case Report

A healthy man aged 40 was admitted to the Royal Infirmary, Edinburgh, in June, 1943, with a history of five days' generalized intermittent abdominal pain and nausea. The day previously the pain had become worse and settled in the right iliac fossa, but the bowels were acting regularly. A firm, rounded, tender swelling about 1 in. (2.5 cm.) in diameter was palpable on the right side 1½ in. (3.8 cm.) superior to the inguinal ligament and near the internal inguinal ring. It could be grasped between the finger and thumb and, except for its site, resembled a small strangulated femoral hernia. It did not pass as far down as the external ring and was irreducible. There was slight tenderness in the right iliac fossa, the tongue was slightly furred, and temperature, pulse, and respirations were normal. The diagnosis was not certain: appendicitis, inguinal hernia with a Richter strangulation, and glandular enlargement were possibilities.

Operation was performed under spinal analgesia, and the usual skin incision for an inguinal hernia was made. When the swelling was adequately exposed it was found to be unconnected with the internal inguinal ring, lying medial to the deep epigastric artery, and was a short, congested, direct inguinal hernial sac. A small mass of omentum was found adhering to the fundus of the sac, and was wrapped around an acutely inflamed appendix. This was removed via the sac, which was then excised. The herniation had taken place through a localized opening with firm edges (about 3/4 in. (2 cm.) diameter) in the transversalis fascia. An uneventful recovery took place.

Comment

Ogilvie (1937) was probably the first to describe a rare variety of direct inguinal hernia, which consists of a tubular process of peritoneum emerging through a circular deficiency with firm tendinous margins in the transversalis fascia medial to the deep epigastric artery. Gill (1939) reported three cases and noted a fourth, the bladder wall being present in some and a Richter's strangulation in one, while MacLeod (1939), Warren (1939), Dodd (1939), Wimberger (1939), Dorling (1939), and Ewing (1943) recorded about a dozen more. The occurrence of acute appendicitis in a hernial sac has been recorded more often, and forms about 1% of all herniae (Wakeley, 1938). This case illustrates the association of two uncommon conditions and no reference to a previous case has been found.

Edinburgh. J. F. CURR, M.D., F.R.C.S.Ed.

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Reviews

WORLD HUNGER AND F.A.O.

The World's Hunger. By Frank A. Pearson and Floyd A. Harper. (Pp. 90. $1.50 or 9s. 6d.) New York: Cornell University Press; London: Oxford University Press.

The first aim of the Food and Agricultural Organization of the United Nations is "food and a health standard for all the people of the world." There are difficulties in the achievement of this aim that we may feel have not been examined fully. The Hot Springs Conference declared that the first cause of hunger and malnutrition is poverty. The fundamental problems are to raise the purchasing power of consumers and to supply the capital for developing agriculture in backward areas. Hitherto purchasing power in the more developed countries has not kept pace with production. It is questionable whether any of the social schemes that have been proposed will raise purchasing power sufficiently. Unless the proposed World Food Board adopts a restrictive policy it may well become saddled with ever-growing surplus stocks that it can dispose of only through an expanded U.N.R.R.A. The improvement of backward types of agriculture involves investments which may well be unremunerative to the investors and the possibility that the investors may be able to dominate the economy of the countries in which agriculture is developed. We have, however, felt little doubt about the possibility of producing the food necessary to maintain a satisfactory level of nutrition.

The authors of *The World's Hunger,* Professors of Prices and Statistics and of Marketing at the New York State College of Agriculture, Cornell University, have attempted "to present some facts about the food habits of the world's two billion people, about their differing habits, about the production of food and the prospects for its increase, and about the possibility of upgrading food habits." About half the book is occupied with surveys of production, trade, and consumption (including food habits), of the physical conditions which make land suitable for agriculture, and of physical geography (not excluding the age of the earth) which are, inevitably, superficial. Their sole value is in showing that a great increase is needed in order to attain the scales of consumption that are recommended and that the area available for the production of food it limited. The authors mention the risks of investment in irrigation and tell us that much of the land that has been irrigated has not paid the original cost and gives no promise of doing so, and leave it at that. It would be useful to know what is the proportion of this land to the total that has been irrigated and whether causes such as the underconsumption and resulting depression of 1929 and the early thirties have not contributed to the failure.

At the end of the chapter on production, trade, and consumption the authors state: "There is no shortage of schemes and plans for upgrading the world's diet. There is shortage of programmes containing down-to-earth methods of attaining this laudable aim." This is flatly untrue. Many practical methods of increasing the amount of food produced have been worked out and are being applied. In the second half of the book the authors mention some of these without, however, making any attempt to calculate how much each or all together might add to the world's food supply. They make no mention either of the control of pests and diseases or of the restoration of land damaged by erosion; yet the methods and organization that have been developed in recent years, with these objects, promise to add considerably to our supply of food. Livestock give a poor return in terms of calories for the food that they eat; the authors fear, therefore, that if the supply of animal products is increased the total calories will fall below requirement. They have missed the point that when land is devoted to the production of cereals its fertility declines, and that mixed farming may give a better yield even in terms of calories. Nor do they take into account the enormous amount of food that is at present consumed by non-productive livestock, from the cattle in India to rats and locusts.

In connexion with the possibility of increasing the production of food the authors might study the report of the U.S. Agricultural Department: "The increase in total production from 1939 to 1944 was twice as large as during the entire 20-year period from 1919 to 1939. This wartime record was accomplished without a significant expansion in acreage, and despite insufficient supplies of labour, machinery, and other materials." Thirty years or more ago yields of wheat in Montana and the Dakotas oscillated between 3 and 60 bushels to the acre. There has now been a long interval without a crop failure, owing to the conservation and good use of water and the use of improved varieties of wheat. This is an example of the down-to-earth methods which are being used all over the world.

This book makes no contribution to the solution of the world's food problems. The authors adopt a hostile attitude towards those who wish to raise the standard of nutrition which is not justified nor even explained by any erudition that they display.

PAPWORTH FAMILIES

The Papworth Families: A 25 Years' Survey. By E. M. Brieger, M.D. With a preface by Sir Arthur MacNalty, K.C.B., M.D. (Pp. 674. 45s.). London: William Heinemann.

Preventive action with a child born into a tuberculous family may take three courses: separation, BCG vaccination, or improvement in the home environment. The Papworth Village Settlement has provided experimental conditions that help in answering the question: Can a high standard of home environment and hygiene (affecting resistance of the individual and intensity of contagion) offset the effect of the presence of an infective source, and possibly also of hereditary predisposition? The germ of Dr. Brieger's painstaking survey is the elucidation of this relationship, but there is a wealth of general information upon the contact-factor in tuberculosis. After an historical introduction on this factor in the pathogenesis of the disease, there comes the survey proper, based upon the records kept by Dr. L. B. Stott from 1922 to 1938 (the detailed family case-histories occupy more than half the book) of 260 children born before the entry of their families to the settlement, and of 108 born in the settlement. Special interest attaches to the group of 50 Village-born children of sputum-positive cases, none of whom, up to an average age of 5 years, had developed active childhood tuberculosis, though latent benign changes, including calcification, were evident in some. A similar freedom from serious disease was found in the Village-born children of sputum-negative cases. The conclusion is that "in these Village-born children, Papworth has apparently succeeded in securing an environment on which exposure to intra-familial infection has not succeeded in producing active lesions." Furthermore, "a comparison of the incidence of lesions in Papworth-born children with the incidence observed in admitted children, exposed before the age of four years and prior to admission, showed that the Village-born children have to be classed in a specially privileged group with regard to contact infection" (p. 148). So it would appear that, within limitations, the question posed above is answered in the affirmative. The limitations are the small numbers, the low average age of the children to date, and the consequent lack of opportunity to study the possible incidence of adult-type phthisis, and the absence of recent tuberculin tests. The continuation of this survey on the lines indicated by Dr. Brieger's work is thus desirable, and as the end-date of his review is 1938, the further work might well be started forthwith.

The findings, if confirmed on larger numbers and for longer periods of observation, will not only show what a well-run village settlement can do for the children of a very small part of the tuberculous community; they will underline the importance of general schemes of social assistance to tuberculous families—as in the "266/T" regulations now in danger of annulment under the National Insurance Act. Dr. Brieger is to be congratulated on his contribution to our knowledge of the epidemiology of tuberculosis.

RADIOGRAPHY OF THE SMALL INTESTINE

Radiologic Examination of the Small Intestine. By Ross Golden, M.D. (Pp. 239; illustrated. 36s.) London: J. B. Lippincott Company.

The small intestine (other than the duodenum) has too often in the past been somewhat of a "blind" area to the radiologist, apart from such gross lesions as obstruction, tuberculosis, and regional enteritis. The time is therefore ripe for an authoritative

survey of the subject from the *x*-ray point of view. It is a pleasure to welcome Prof. Ross Golden's monograph and to pronounce it a work, from an authoritative pen, of first importance to radiologists and gastroenterologists.

The author's survey of the subject is very complete. He begins with a general introduction describing the indications for a small intestine study, and the technique both of the small intestine meal and the small intestine enema. Then follows an account of the embryology, anatomy, and physiology of the jejunum and ileum; and in discussing the physiology an account is given of the chemical mediator theory of nerve transmission and its application to the movements of the small gut. The author then describes the *x*-ray appearances in the normal small intestine, including the appearances in the infant—a subject that has received too little attention in the past.

In the section on obstructive and paralytic ileus there is a complete and informative account of the use of the Miller Abbott tube in diagnosis and treatment, which will be of great value to all who attempt this technique. One of the most important chapters is that on the *x*-ray picture of the intestine in disorders of nutrition: the physiological mechanism is discussed, and the nonspecificity of the changes wisely emphasized. Diseases of the mesentery, allergy, inflammation, neoplasms, congenital abnormalities, the effects of drugs, and miscellaneous conditions are described in later chapters, and the book ends with a bibliography of 200 references.

The print is readable, the book is free from padding, and the illustrations are well chosen and reproduced. It is a monograph to be recommended to all who are interested in this comparatively unexplored region. They will find in it much of interest and help in their work.

CLINICAL ELECTROCARDIOGRAPHY

Electrocardiography in Practice. By Ashton Graybiel, M.D., and Paul D. White, M.D. With the assistance of Louise Wheeler, A.M., and Conger Williams, M.D. Second edition, revised. (Pp. 458; 323 illustrations. 35s.) London: W. B. Saunders Company. 1946.

For the clinical exploration of the heart muscle the conventional limb lead electrocardiogram is no longer always sufficient. This fact is well demonstrated by Graybiel and White in the second revised edition of *Electrocardiography in Practice*. They show that, in general, an acute myocardial lesion may be inferred from the analysis of limb leads but that in some cases it will only be registered when the precordial leads are paired with one arm, the left foot, or the Wilson central terminal. The authors have given a readily understandable and fully illustrated account of this matter. While in this country the chest lead paired with the right arm is the technique in routine use, Graybiel and White consider that the Wilson central terminal will prove more satisfactory as it shows less potential variation than any single extremity. Errors of electrocardiographic interpretation are as likely to arise from lack of familiarity with the range of the normal as from failure to recognize an actual abnormality. This very real problem is excellently dealt with in Part II of the work. Later sections are devoted to the arrhythmias and the types and patterns of electrocardiograms in relation to aetiology. All the well-known aetiological groups are surveyed, and, in addition, the acute infections, nutritional and endocrine disorders, and the *cor pulmonale* to which the authors have made important clinical as well as cardiographic contributions. The presentation of a number of electrocardiograms for practice in interpretation will help readers to assess their own knowledge of the subject. Whatever is the result of this test there is no doubt that study of Graybiel and White's work will make many obscure points plain and fill some lacunae in the knowledge of almost every reader.

Notes on Books

Reconstruction by Way of the Soil, by G. T. WRENCH, is published at 12s. 6d. by Faber and Faber. In elaborating the title of his book, Dr. Wrench develops the thesis that farming is an art and something infinitely wider than scientific agriculture. It is a "Way of Life" itself. The family as a group is but a human complement of the soil itself, both family and soil recreating life. In the first three chapters he deals with the intensive personal agriculture which gave to the early Romans their physiological vigour and virile character. Although the carcass feeding of Polar Eskimos plays almost the same prominent part as in beasts of prey, the lacto-vegetarian diet, wholemeal grain, fruits, vegetables, milk and its products are referred to as the food of many of the healthiest and strongest peoples of the present day. War and history depend much upon man's attitude to the soil. The author shows that although this attitude is ignored by historians it will give rise to a greater knowledge of the causes of devastating war and its prevention. Nomads and speculators who lead an ill-balanced life by not following the "rule of return" which is the only stable rule of living regard the soil as something to be exploited—even plundered—for their own gain, as a means to mastery and wealth. A more true valuation of the soil and its effects would be a powerful factor in the maintenance of peace. After dealing with the economics of soil, the proper and wrongful use of urban and rural waste, and the wonderfully successful methods of primitive farmers, Dr. Wrench has an interesting chapter on the effects of the dominance of money. The subject of this book is world wide: it calls for a means of action in reconstruction via the soil.

The Association of Special Libraries and Information Bureaux ("Aslib") has issued a *Catalogue of Films of General Scientific Interest in Great Britain* compiled by the Scientific Film Association. The classified subject index has five columns of entries under the general heading "Medical and Para-Medical Sciences," with a number of sub-headings. The catalogue can be obtained for 5s. 3d. post free from Aslib, 52, Bloomsbury Street, London, W.C.1.

General Bacteriology Laboratory Manual, by L. S. MCCLUNG of the University of Indiana, consists of instructions for 61 sessions of practical work in general bacteriology, with spaces for recording results. Though teachers of medical bacteriology rarely have time for dealing with the fundamentals of the subject in so extensive a way as this, they may nevertheless gain some useful ideas for the practical teaching of bacterial morphology and physiology. The publishers are W. B. Saunders Company, and the price is 6s. 6d.

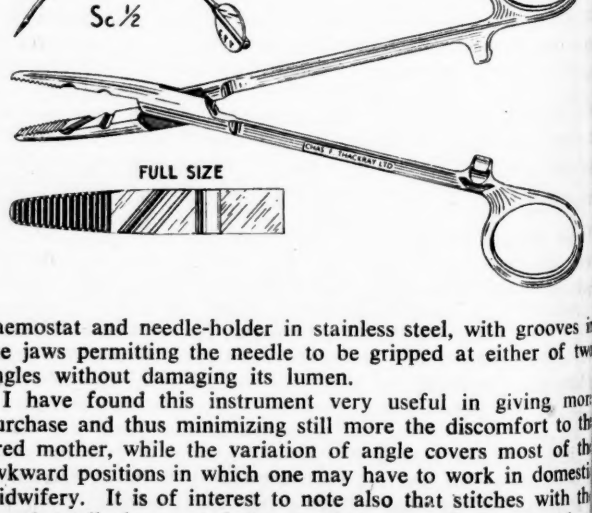
Correction.—We regret that the name of the publishers of *Principles of Dynamic Psychiatry* by Jules H. Masserman was incorrectly given in our issue of Oct. 19 (p. 579). Messrs. W. B. Saunders Company Ltd. are the publishers of this book.

Preparations and Appliances

COMBINED HAEMOSTAT AND NEEDLE-HOLDER

Dr. J. S. LAURIE (Pontefract) writes:

Since the description (*B.M.J.*, Sept. 9, 1944) of my use of a hollow curved perineum needle for obstetric work, it appears that very widespread interest has been aroused in this simple little instrument. Messrs. C. F. Thackray, of Leeds, who made the original needle for me, have kindly designed a combined



haemostat and needle-holder in stainless steel, with grooves in the jaws permitting the needle to be gripped at either of two angles without damaging its lumen.

I have found this instrument very useful in giving more purchase and thus minimizing still more the discomfort to the tired mother, while the variation of angle covers most of the awkward positions in which one may have to work in domestic midwifery. It is of interest to note also that stitches with the round needle have much less tendency to cut out than those with a cutting needle as normally used.

The haemostat end saves duplication of instruments in an already crowded bag.

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CONTROL OF LEPROSY

Up to thirty years ago the only method in common use for the control of leprosy in the British Empire and elsewhere was the Biblical and Middle Ages plan of compulsory segregation. For want of any effective treatment of the advanced cases, which alone filled the old type of leper asylums, that method nearly always meant lifelong imprisonment without hope of recovery. A prospect of an improved outlook was aroused when in 1916–17 Leonard Rogers reported better results in early cases treated as outpatients with injections of soluble preparations made from the ancient Indian remedy, chaulmoogra oil, in place of the oral administration of the nauseating whole oils. Early confirmation and extension of this work were furnished by E. Muir in India and by American workers in Hawaii and the Philippines, though it is of little value in advanced cases. Rogers therefore advocated large-scale clinic treatment of early cases, together with voluntary isolation of highly infective ones in agricultural colonies under expert treatment, which suffices to attract as many of them as can be accommodated. In India scores of thousands of outpatients are being treated every year at hundreds of dispensaries under trained experts; but funds are still lacking for the essential complementary colonies for advanced cases.

It soon became evident that compulsory isolation had become worse than useless, because it led the sufferers to hide their affliction for years until it had become too late for effective treatment. Rogers therefore made a comprehensive study of the literature of leprosy and formulated a plan of campaign to enable early cases to be discovered and treated and the more infective ones to be isolated with little or no compulsion—as described in a recent paper in our columns.[1] The essential points are that leprosy is mainly a house infection; that children are far more susceptible than adults; that the incubation or latent period after exposure to infection before the first symptoms appear is rarely over five years; and that neural cases—which constitute three-fourths to four-fifths of the sufferers in most countries—are little if at all infective, so these need not be isolated. It followed that close contacts of all discovered cases of leprosy should be examined at least every six months for five or more years to enable the great majority of new infections to be traced in a very early and, for the most part, recoverable stage. This plan has proved to be of value in the serious South Pacific Nauru epidemic; and in British Guiana and Ceylon, the first British colonies to modify their compulsory laws to permit of its trial. Moreover, in South Africa bacteriological examinations of the 2,501 compulsorily isolated cases revealed that one-third of them were uninfective. Their release, together with the provision of agricultural colonies and improved treatment, soon resulted in most of the admissions being early voluntary cases. In twenty-five years 4,502 patients—two-thirds of the known total—had been released recovered, and three-fifths of them had remained free from active symptoms for five years and upwards.

In 1924 the British Empire Leprosy Relief Association (B.E.L.R.A. for short) was founded, with a daughter association in India. Working in close co-operation with the Colonial Office and Colonial Governments the successive secretaries, Mr. Oldrieve and Drs. Robert Cochrane and E. Muir, have made repeated tours through our Empire to organize the work. The most difficult problem was presented by Nigeria, with leprosy rates of from 1% to 10% and 70,000 cases in a single province. Here, through the combined efforts of the Government, B.E.L.R.A., and missionary societies, provision has been made of doctors, Toc H lay workers, and a trained indigenous staff; and agricultural colonies with numerous surrounding clinics have been organized. At two of these alone 25,000 patients are receiving regular treatment, with results that led the Nigerian Government to take over and extend the work with the help of liberal grants from the Colonial Development Fund. At the last annual meeting of B.E.L.R.A. Dr. Davey described the system of voluntary isolation of infective cases in model villages, built at the cost of the chiefs, together with village house-to-house surveys to find and treat the early cases at clinics—all with the essential cordial co-operation of the people. He is now able to report that in some areas the turning point has been reached and the incidence of leprosy is on the decline. At the same meeting the chairman of the Executive Committee, Sir Bernard Bourdillon, ex-Governor of Nigeria, announced that his memorandum clearly defining the respective roles of Colonial Governments and the Leprosy Association has been accepted by the Colonial Office.

The present position, then, is that the modern methods of control of leprosy have proved to be of value wherever they have been efficiently carried out, and machinery is available for their gradual extension to other affected areas. Progress must be slow in view of the fact that cases in the British Empire are estimated at about two million. In order to accelerate progress the most urgent need is the discovery of a more efficacious treatment of the more advanced and infective type of cases. Here, too, new hopes have been kindled by recent reports of more favourable results from the intravenous use of the sulphones, promin and diasone, respectively by Fite and Gemur[2] in the United States and by E. Muir[3] in Trinidad. Further trials of these and other available preparations, which have already shown promise against the closely allied tubercle bacillus, should be carried out. Altogether the outlook for sufferers from leprosy has greatly improved during the last three decades.

[1] *British Medical Journal*, 1946, **1**, 825.

[2] *Sthn. med. J.*, 1946, **39**, 277.

[3] *Intern. J. Leprosy*, 1944, **12**, 1.

PENICILLIN IN THE TREATMENT OF SINUSITIS

The value of chemotherapy in securing the rapid resolution of acute sinusitis must be accepted with caution. Cases in which inflammation does not extend beyond the mucous membrane generally get well with the usual conservative treatment, but progress is more rapid under treatment with penicillin—provided that the infecting organism is penicillin-sensitive—and in cases which prove resistant to ordinary treatment penicillin administered systemically is of great value. A more difficult problem is the conservative treatment of chronic, subacute, or acute on chronic sinusitis. Rüedi[1] has classified chronic sinusitis for this purpose as follows: (1) Simple infection of one sinus, usually the antrum; (2) a small group of cases of chronic pansinusitis combined with bronchiectasis; and (3) a large group of cases of "pansinusitis chronica polyposa" in which an allergic factor also is concerned. In general the treatment of chronic sinusitis with penicillin, whether by local instillation through ureteric catheters introduced into the antrum, or by systemic injection, or by a combination of the two, has proved disappointing, probably for three reasons: the penicillin does not affect organisms secluded in fibrous tissue and bone; there is often a component of the mixed chronic infections which is insensitive to penicillin (e.g., Friedländer's bacillus); and there may also be an allergic factor.

The experience of Bettington and Vincent[2] of military cases agrees with this. They found that acute sinusitis as such responded readily to chemotherapy with sulphamerazine, but that many of the acute cases seen were really acute reinfections, and some had already undergone operations for drainage of the antrum. Where drainage was good the cases responded well to treatment with sulphamerazine and lavage. For those without drainage openings sulphamerazine and lavage by puncture repeated four times was the routine; and if after this course had been repeated the result was not satisfactory penicillin was instilled through the cannula used for lavage. In spite of this they found that out of fifty-five patients with subacute or chronic sinusitis fifteen required radical operation; twenty-eight were cured by sulphamerazine, and ten by penicillin; and in two more operation was recommended but not performed. The fifteen who underwent radical operations all had nasal polyposis, which was regarded (as it was by Rüedi) as a condition particularly unfavourable for chemotherapy alone. Priest[3] found that in chronic sinusitis, whether associated with bronchiectasis or not, treatment by penicillin was disappointing and that permanent improvement could seldom be obtained without operation, even though the penicillin was given systemically as well as by local instillation. Only two out of eight cases of chronic suppuration associated with bronchiectasis benefited from treatment with penicillin. Crowe,[4] also, found that penicillin did not benefit chronic cases in which the infection had become inaccessible to local treatment.

The situation is different, however, in those severe and desperate cases where spreading osteomyelitis supervenes on chronic suppurative frontal sinusitis or pansinusitis, usually of the type associated with polyposis. In such cases, which previously responded only occasionally to drastic removal of bone, and then only if extradural and subdural abscesses had not already formed, the effect of systemic penicillin is dramatic. Rüedi has reported clinical details of ten such patients saved by the combination of operation with penicillin. The removal of bone need not be so extensive as was formerly practised, because of the great efficacy of the drug. Fortunately these cases are not very common, and no doubt more will be reported.

It was generally considered that in osteomyelitis arising spontaneously from chronic sinusitis the prognosis was less unfavourable than in post-operative osteomyelitis, which was almost always fatal after a prolonged illness. It now seems that more importance must be attached to the bacteriology. Bettington and Vincent found that the predominant and most constantly present organism in chronic sinusitis was a haemolytic *Staph. aureus*. Williams,[5] however, has reported from the Mayo Clinic that in cases of osteomyelitis in which this organism is the infective agent there is a tendency for the osteomyelitis to localize, with a fair prospect of recovery after a radical removal of bone; but that when the organism is an anaerobic (or micro-aerophilic) short-chained streptococcus a malignant slowly spreading type of osteomyelitis is very likely to be fatal. Williams and Heilman[6] showed that though this organism was fastidious as well as anaerobic it could be grown on dextrose-brain broth, and that an "autogenous antivirus" prepared from it was valuable in treatment. More recently, however, Hempstead[7] has shown that this dangerous streptococcus is sensitive to penicillin, and the prognosis in osteomyelitis caused by it is therefore much improved. He refutes the view formerly held that *Staph. aureus* is responsible for the fatal form of infection. By the isolation of this type of streptococcus at the Mayo Clinic much that was mysterious in the course of the dreaded complication of sinusitis is explained; and the importance of bacteriological investigation is emphasized once more.

1 *Schweiz. med. Wschr.*, 1946, **76**, 189.
2 *Med. J. Aust.*, 1946, **33**, 358.
3 *Ann. Otology*, 1945, **54**, 786.
4 Ibid., 1943, **52**, 541.
5 *Proc. Mayo Clin.*, 1944, **19**, 474.
6 *Arch. Otolaryng.*, Chicago, 1937, **25**, 196.
7 *Proc. Mayo Clin.*, 1944, **19**, 480.

MATERNAL MORTALITY IN HOSPITAL PRACTICE

The last twenty years has seen a progressive rise in the number of women going into hospital for delivery. In England and Wales the number of institutional live births, which was 15% in 1927, had risen to 35% in 1937. This tendency is more noticeable in urban areas. In 1938 the number of births taking place in hospital or nursing home was 69% in the County of London, 49% in Liverpool, and 50% in Manchester. During the war there was a further steep rise and in some of the larger cities the percentage figure went up by as much as 15 or 20. In 1944 the Royal College of Obstetricians and Gynaecologists[8] suggested that planning for the future should be based on the expectation that about 70% of all births will take place in hospital. If the facilities were available and properly distributed

8 *Report on a National Maternity Service*, 1944. Issued by the Royal College of Obstetricians and Gynaecologists. London.

throughout the country it would look as though this figure should be reached quickly. The trend away from domiciliary midwifery is even more evident in the U.S.A., where already in 1944 70% of confinements took place in hospital as against 53% five years earlier.

With this in mind it remains to be asked how safe is institutional midwifery under modern conditions. All are agreed that where the nursing home or hospital and its staff are inefficient the risk to the patient is greater than if she were delivered in her own home, but that where equipment and staff are adequate institutional midwifery is remarkably safe. The maternal death-rate in most of the large obstetrical teaching hospitals in this country is somewhat higher than that for the population as a whole and might be higher still if such hospitals regularly admitted cases of abortion, a condition which accounts for a considerable number of maternal deaths (0.4 per 1,000 total births in 1944). The figures as published, however, can be misleading. In many of these hospitals a large proportion of admissions are emergency cases, among which most of the deaths occur. The maternal death-rate of booked cases, even when these are selected principally for the reason that they are abnormal and likely to require operative delivery or other special treatment, is as a rule much better than that for the whole country—often two or three times as good. Moreover the hospital statistics usually include deaths from fortuitously associated conditions such as heart disease, whereas these are classified separately by the Registrar General.

The high degree of safety which now attaches to midwifery in a well-organized hospital is borne out by M. E. Davies and T. G. Gready,[9] who have examined the records of all the maternal deaths which occurred in the practice of the Chicago Lying-in Hospital during a 13½-year period, 1931–45. There were eighty-one deaths among 47,945 patients, an over-all mortality of 0.17%. The maternal death-rate was over 4 per 1,000 live births in 1931 and gradually fell until it has been less than 1 per 1,000 since 1942, running parallel with and below that for the white population of the United States. The primary factors causing death were genital infection 23.5%, extra-genital infection (including pneumonia, phthisis, etc.) 16%, haemorrhage and shock 16%, heart disease 16%, toxaemia of pregnancy 7.4%, pulmonary embolism 7.4%, anaesthesia 3.8%, transfusion reactions 3.7%, and hyperemesis gravidarum 2.5%. The deaths due to genital infection all occurred before 1939, giving a subsequent five-year period free from fatal sepsis. Among 271 cases of placenta praevia there were only two deaths, and both are classified as avoidable. Two out of 237 patients suffering from abruptio placentae (accidental ante-partum haemorrhage) died. The incidence of post-partum haemorrhage, generally reckoned at 5–6% of all deliveries, was reduced to 1.1% during the years 1940–3. There were thirty cases of ruptured uterus, seven proving fatal. The frequency and risk of heart disease complicating pregnancy, which is now becoming one of the main causes of death, remained unchanged during the period under review. Delivery by Caesarean section was carried out 1,824 times, the lower-segment technique being employed in 1,704, the Porro operation in 98, and the classical incision in 22. The total mortality rate was 0.6%, but it was only 0.3% from the lower-segment operation.

Good as these results are, Davis and Gready conclude that two out of every three deaths could have been avoided. Preventable factors are charged either to the obstetrician, the institution, or the patient. They emphasize a fact which is not always appreciated—namely, that one of the chief functions of a teaching institution such as the Chicago Lying-in Hospital is the training of young obstetricians; and no matter how well they may be supervised by the senior staff that always involves an increased hazard. The teaching of the future specialists is done at a cost; the greatest care is necessary if this is to be kept down to a minimum.

[9] *Amer. J. Obstet. Gynaec.*, 1946, **51**, 492

NEED FOR RESEARCH IN RHEUMATISM

The Empire Rheumatism Council has during the past week been celebrating its tenth birthday, and coincident with this is the announcement that the Nuffield Foundation has made a grant of £100,000 to be spread over 10 years for the establishment of a rheumatism centre in the Manchester Royal Infirmary. The importance of this step and the need for attracting research workers into rheumatism was referred to by speakers at the dinner of the Heberden Society held last week to welcome the official Swedish delegates—Prof. J. A. Höjer and Dr. B. Strandell. Dr. C. W. Buckley, who was in the chair, said that the Empire Rheumatism Council had its origin in earlier efforts to control the rheumatic diseases. The first was the appointment by the B.M.A. in 1931 of a committee on the causation and treatment of arthritis and allied conditions. Subsequently the Royal College of Physicians set up a committee and published the results of its work in four annual reports, the successor to which is the *Annals of the Rheumatic Diseases*, now published by the B.M.A. Then the Empire Rheumatism Council had been formed, and "almost side by side" the Heberden Society. Heberden with his nodes and Haygarth with his nodosities had been prominent figures in the history of rheumatism; and, Dr. Buckley added, Lord Horder, who had been so active in the campaign conducted by the Empire Rheumatism Council. Their problem, he said, was to educate the public and also the profession in the numerous problems of this disease.

Prof. L. S. P. Davidson developed the same theme, observing that during the past 20 years they had spent much time in trying to persuade central and local authorities of the importance of rheumatism from the standpoint of both economics and health. In 1937, for example, it was found that out of 2,000,000 incapacitated persons in Scotland 50,000 had suffered from rheumatism. Apart from small and private efforts he claimed that the matter had not yet been tackled at all. In the past the medical profession had been complacent about the problems presented by rheumatism. "We have run away from it." But he was optimistic about the future. There were signs that general physicians who were not specialists in the subject were nevertheless becoming impressed by its great importance. If the efforts of Government Departments and the medical profession could be combined something, he thought, could be done to give the young man encouragement to undertake the research that was so badly needed. Dr. L. T. Swaim, of the U.S.A., and Dr. B. Strandell, of Sweden, both stressed that in their countries rheumatism also bulked large as a health problem, and a problem especially of general medicine.

Sir Wilson Jameson, speaking to the Empire Rheumatism Council on Monday, said the Ministry planned to have centres for research and diagnosis linked with university medical departments, "peripheral centres," and beds for long-stay cases in institutions. The Ministry was going to make rheumatism one of the big problems to be tackled in the National Health Service. If it was to be properly studied in these centres they would need young people adequately trained as general physicians and also in the study of rheumatic diseases. He hoped they would come forward and take advantage of the opportunities available in the field of

rheumatism. Sir Wilson ended by saying: "None of these official schemes for National Health Services and the like will thrive in the absence of first-class voluntary effort, and if the Empire Rheumatism Council will go on in the same way during the next 10 years no one will be better pleased than the Ministry of Health."

FIELD-MARSHAL MONTGOMERY ON MORALE

The subject of morale was chosen for the Lloyds Robert Lecture delivered on Monday before the Royal Society of Medicine, Lord Montgomery said, for two reasons. The first was because high morale was a quality without which no war could be won; and the second: "I thought it would be of interest to the medical profession because morale is a mental quality, being essentially a product of the mind and conscience." He held strongly that the soldier was a citizen and not chiefly a military figure. As a citizen he would reflect the national character. "The national character is therefore of great importance, and anything that weakens it weakens the Army." In war the moral stature of some men would increase. Others, under the stress of battle, surrendered to fear and to fatigue and allowed their characters to disintegrate. "In such cases there has been a loosening of the character due to a partial surrender to fear." Lord Montgomery stressed that all through the question of morale there was the problem of dealing with fear. High morale was that quality which maintained human dignity at all times and developed man's latent heroism; it was not contentment, nor was it fitness or healthiness or happiness; nor was it toughness. "High morale implies essentially the ability to triumph over all difficulties, dangers, and discomforts, and to get on with the job." Lord Montgomery laid down four fundamental factors for morale: leadership, discipline, comradeship, and self-respect. He did not believe that devotion to a cause was basic or fundamental, although he subsequently observed that no nation could fight an unpopular war. Discussing leadership, he said that human beings had certain common characteristics and that in battle the most common of these was fear. All men were afraid at one time or another to a greater or less extent, and in fear men banded together and looked for guidance. "At such moments they are not capable of standing alone; they find the burdens too great to bear. The leader accepts the burdens of others and earns their gratitude thereby and the right to lead them." The quality men recognized in their leader was decision. Fear made a man sluggish and indecisive. The leader's power over his men was based on his ability "to cut through that fear paralysis" and so help others to escape from it. The leader's greatest asset was his ability to act normally in abnormal circumstances and to continue to think rationally when his men had ceased to think.

The object of discipline was the conquest of fear. The basis of fear was the awareness of danger. "A man becomes aware of danger when he thinks he is opposed by something more powerful than himself." Discipline helped a man to lose his own identity and created a corporate sense. Discipline also implied a conception of duty; but such conception, Lord Montgomery thought, did not embrace abstractions such as freedom, democracy, empire. A man's sense of duty extended to the friends round him. This brought the speaker to his third factor, comradeship: "Morale cannot be good unless men come to have affection for one another." Comradeship was the great antidote to fear because it gave a man friends. Self-respect, Lord Montgomery's fourth fundamental, was a quality which developed if the other three fundamentals were present. Men had to take pride in their ability to carry out any job. "A man who feels he is trusted will feel he is efficient and will begin to respect himself and have confidence in his own ability." A powerful contributory factor to high morale was success; it was not possible to maintain it during a long period of defeat.

Returning to his theme that the soldier is first and foremost a citizen, Lord Montgomery said that nothing weakened a man more than trouble at home. The soldier had to have good living conditions and always good food, but there was a danger of considering welfare as an end. "It will never produce high morale by itself because it is essentially soft." Hardness and privation, he said, were the school of the good soldier, and idleness and luxury his enemies. It was not for nothing that one of the great rallying calls of the English race had been the cry "Blood, toil, tears, and sweat." Lord Montgomery ended a memorable lecture by referring to the strain on the leader whose men had a high state of morale: "They think that they can do no wrong, and they think that you can do no wrong; but it might stage a come-back on you."

D.D.T. FOR TROOPS

From statements in the press and on the radio and films it is well known that British troops in the recent war were protected from lice by shirts impregnated with D.D.T.—a procedure suitable for soldiers, whose uniform clothing can be treated *en masse* and issued as required. Such impregnated garments give longer and more reliable protection than the powder applied with a dusting gun, which was the rapid, simple treatment given to refugees and prisoners.

The biological testing necessary before this large-scale use could be instituted has been described by Musgrave recently.[1] (During the war the work was secret, and subsequently a considerable delay in publication was made inevitable by the spate of papers describing formerly secret research.) The biological assessment of effectiveness in killing lice was compared with independent chemical estimations of the percentages of D.D.T. remaining in undergarments after various periods of wear and numbers of launderings. A number of garments tested were distributed, as shown in the table.

Biological Assessment	Chemical Analysis: % D.D.T. wt./wt.				
	Less than 0·04	0·04–0·08	0·09–0·19	0·2–0·5	More than 0·5
Not effective ..	8	2	1	0	0
Slightly effective ..	2	2	1	0	0
Moderately effective	0	1	1	0	0
Effective	0	0	3	3	1
Very effective ..	0	0	0	1	2

The author concludes that 0.1% wt./wt. of D.D.T. on a garment is approximately the lowest limit for prevention of persistent lousiness. Garments originally impregnated with 1–2% fall to this level after four or five weeks' wear and four or five launderings.

Of interest is the time of contact required for the louse to receive a lethal dose. Lice were allowed to wander on impregnated clothing for various periods and then removed to a clean environment. It was found that all lice were killed some hours after one hour's contact with 1.75% impregnated fabric and that there was a high subsequent mortality among those which had crawled for three hours on fabric with as little as 0.1% D.D.T. Adult lice were observed to show clear signs of D.D.T. poisoning after four to six hours on 0.1% fabric and after two hours on 1.75% fabric at 30° C.

Sir Heneage Ogilvie will deliver the Bradshaw Lecture before the Royal College of Surgeons of England on Thursday, Nov. 14, at 5 p.m. Subject: "Surgical Handicraft."

[1] *Bull. entom. Res.*, **37**, 43.

MEDICAL WOMEN'S INTERNATIONAL ASSOCIATION

The first postwar meeting of the Council and of delegates of the Medical Women's International Association was held in London from Sept. 19 to 22 under the presidency of Miss Louisa Martindale, F.R.C.O.G. Representatives were present from Belgium, Denmark, Finland, France, Great Britain, Holland, India, New Zealand, Norway, Sweden, Switzerland, and the United States.

Women Doctors in the War

On the first day, the subject for discussion was the work of medical women in the Armed Forces and the Resistance Movement. Members were welcomed by Dame JANET CAMPBELL, President of the British Medical Women's Federation. She stressed the fact that medical women had a special contribution to make towards reconstruction and the establishment of peace and harmony in the world. She felt that an International Association of Medical Women supplied a valuable background and organization from which this work could develop. Miss LOUISA MARTINDALE pointed out that this meeting was being held in conditions of perfect freedom ; that, for the first time for many years, everyone could speak openly and without fear. She hoped that members would maintain an international rather than a national outlook. She emphasized the serious effect of the war on the youth of all countries involved and felt that one of the most important functions of medical women would be to help in the redemption of youth.

Dr. S. LAMOTTE (France), assistant physician to the Parisian Hospitals, said that French medical women won an uncontested place in the Army during the later campaigns. The occupation of France made it impossible to set up an officially recruited force, and so it was entirely due to individual initiative that a body of women doctors got together and worked with the French Army in France, North Africa, Italy, England, Alsace, and Germany. The Women's Auxiliary Army Force, formed in North Africa in 1944, contained a Women's Medical Corps of over 150. This corps would persist, and had established for itself an honoured and privileged position in France.

Dr. LETITIA FAIRFIELD (one-time medical adviser to the A.T.S.) spoke of medical women's work with the R.A.M.C. They had complete equality of status and conditions with their male colleagues and worked in most of the theatres of war, not only in the care of the A.T.S., but in many cases in hospitals and casualty stations where the troops were treated. There were 600 women doctors in the Army before the end of the war.

Miss JOSCELYN MOORE (specialist in gynaecology lately employed in the R.A.M.C.) spoke of her work among wives and children of regular soldiers in 1940, and later with the A.T.S. The incidence of illegitimacy and of V.D. in the A.T.S. was remarkably low. The commonest disorders were associated with menstruation, though these were relatively mild. Dysmenorrhoea was worse in sedentary occupations and in a proportion of cases was an escape phenomena, for the most part unconsciously produced.

Dr. DOROTHY FENWICK (former squadron leader, R.A.F. Bomber Command) said that women doctors were given important work in the Air Force and were well received by their male colleagues. One of their most interesting jobs was lecturing on personal hygiene and V.D. to all newly joined women in the W.A.A.F. She herself travelled 22,000 miles a year on visits of inspection. Every airwoman could consult a woman medical officer if she wished and a large proportion of them availed themselves of this opportunity.

Work for the Resistance Movement

Dr. FOG (Denmark) said that in the resistance movement in Denmark medical men and women worked together without sex discrimination. Medical women took an active part. They secretly received weapons, helped and transported saboteurs, hid refugees and parachutists, and acted as couriers. They were favourably placed for this work because the constant coming and going in their consulting-rooms made them a safe place of rendezvous. Their visits to patients afforded a means of conveying information, they had access to private telephone communications, and often used ambulances and hospitals to save Jews and others whom the Germans were seeking. They were also able to use their cars to transport many people to safety during the blackout. Their medical and surgical skill was frequently employed in helping wounded saboteurs whom they kept in secret clinics and private houses. Many women doctors were discovered and sent to concentration camps for long periods. It was generally accepted in Denmark that they had done magnificent work.

Dr. DROEVER BONNET (Holland) stated that medical women played a similar part in her country. There was a strong resistance organization. One woman doctor was a leader of the whole movement, another who used her house as a centre of the resistance was arrested and killed by the Germans. Yet another became chief doctor in a German internment camp, as the German doctor left all the treatment to her. She was thus able to give great assistance to her fellow internees, and even to help some to escape.

Dr. ASTRID GULDBERG (Norway) told a similar story of medical women's work and heroism. Ten medical women were imprisoned for their share in the resistance activities, and one, who went voluntarily with her Jewish patients to Germany, had never been heard of again. The Norwegian women doctors felt proud that they were able to play such an active part in helping their people and their country.

Dr. DE BLAINVILLE (France) said that French women had also played a most active part in the resistance movement, and she herself was arrested for her resistance activities in 1944 and sent to Fresne prison near Paris, and then to Germany. There was no treatment or care given to the prisoners, and no medical services at all in the French concentration camp, and large numbers died. Transport into Germany was appalling ; 125 people were put into cattle trucks, and many died on the way. She herself was sent to Ravensbruck, the biggest concentration camp for women in Germany ; there were 16,000 there at one time without any medical attention. All property was taken from them, huts were densely overcrowded, and infection was rife. Examination for pregnancy was conducted with no attempt at cleanliness, and prostitutes were mingling with healthy women. Certain camp blocks were reserved for those to be sent to the gas chambers or the crematorium. Experiments were carried out on the prisoners with the greatest cruelty. The influence of the women doctors was mainly to try to comfort the women and raise their morale. This they did with great courage and devotion.

Dr. MICHOTTE-ROUSE (Belgium) spoke of her work in charge of a hospital at Bruges at the time of Dunkirk. A woman doctor had sole charge of the whole Malmédy region during the war and did outstanding work in Belgium. As in other countries, medical men and women gave the most devoted service at great personal risk.

Organization of Medical Care in Wartime

On the second day the subjects dealt with were Organization of Care and Medical Treatment during the war, and the problems of postwar reconstruction.

Dr. DOROTHY TAYLOR (senior medical officer for maternity and child welfare at the Ministry of Health) read a most interesting paper on the arrangements made by the Ministry for the care of mothers and children during the war. Dr. HEISE (Denmark) read a paper on the arrangements which had been made in Denmark. Miss LOUDEN (surgeon, South London Hospital) spoke of the work of the hospital during air raids. They dealt with men, women, and children. One patient had thirty fractures and yet made a good recovery. Dame LOUISE MCILROY spoke of the organization of maternity work in Buckinghamshire. Dr. HARDING gave an account of the life in the London underground tube shelters during the war, and of medical work among the shelterers. She stressed the excellent health that they had enjoyed despite the most unfavourable conditions, and also the high morale of both children and adults.

Dr. ESTHER LOVEJOY (U.S.A.), one of the founders of the Medical Women's International Association, said that the part of American medical women had been that of sympathetic observers, and that they had done what they could by sending money and such other things as they were allowed, both to the medical women of Britain and other countries.

Dr. BERGEROT (France) said that 600,000 arrests were made in France during the war, and there was still no news of

250,000 people who were deported to Germany. In one camp near Strasbourg over 45,000 people were used as subjects for vivisection, or experimental injection; 500 cases a day were used at Belsen for artificial insemination experiments. Among the deportees who were now returning, malnutrition was a great problem. It required a great deal of organization to try to sort out all these people and to re-establish them. There was an order in France that employers must take back their old employees, but this created great difficulties because so many of the returning men were suffering from emotional instability, loss of memory, and physical deterioration.

Dr. ANDREEN (Sweden) said that Sweden's role had been that of trying to help refugees from other nations. Thus 70,000 Finnish children were billeted in private homes and a great number were invalids or tuberculous. In 1944, 30,000 Baltic refugees were received, and in 1945 over 30,000 refugees and displaced persons came to Sweden. The large majority of the women doctors took an active part in this work. They had as far as possible kept up international contacts with other medical women colleagues during the war.

Problems of Relief and Reconstruction

Dr. MARCUS JEISLER (France) spoke about the psychological effects of the war on French children. She said that the peak figures of delinquency and emotional disorder in relation to children were reached in 1942, and had lessened since that date. The war definitely increased psychological disorders in children, but only in those who had already shown such tendencies. There had not been much increase in the numbers of children abandoned by their parents. There were a few cases of children living wild in groups or bands, who were found near the towns at the time of the wholesale deportations. A number were orphans, and were now in the care of charitable organizations. Some of the children who had lost their parents, or had seen them maltreated, wanted to avenge them. Some children were suffering from shock, and there had been a considerable increase of delinquency. Other countries had been very helpful. Switzerland had taken many of these children even during the war. Some had been sent to North Africa and some to Palestine. Sweden helped by sending money, and Great Britain in a number of ways. The question of the Jewish children had been particularly difficult. The surviving children of the deportees were like little savages. They had their own laws and their own chiefs and were brutal, but with patience they were gradually coming back to normal. The children were suffering greatly from lack of education during the war years, but German propaganda seemed to have affected them very little.

Dr. MIDDLEHOVEN (Holland) said that her country had set up an active system of relief units, which had enabled them to combat in a very short time the most cruel consequences of the hunger blockade of 1944–5, and to restore their normal hygienic and medical services. Many of their problems had been wounded soldiers, victims of air raids, and the rehabilitation of the many workers who had been deported by the Germans. Tuberculosis and syphilis had increased alarmingly among these people, and congenital syphilis among infants was not now uncommon. The Dutch population of the Netherlands East Indies, who were all evacuated to Holland after the capitulation of Japan, had lost everything and their physical condition was deplorable. In Holland, they were given material and financial help for six months, and as long after as necessary. Special dispensaries for tropical diseases and nutritional deficiencies had been set up. She was impressed by the marvellous training and education which the children had been given by their mothers in the Japanese camps. They behaved much better than the Dutch children, who practically ran wild during the war years. Those who had collaborated with the Germans presented another grave problem. They were still in camps, their children had been taken from them and placed in children's homes or with foster parents, as camp life was not suitable for them and it was feared that they would become infected with Nazi ideas.

Dr. HOLDERSON (Norway) stated that Norway had a population of only 3,000,000 though it was an extensive country. Their loss in personnel was heavy; 300,000 died in German concentration camps. There was also much material damage. The medical women of Norway had played an active part in helping their people. America had sent them $50,000 for relief work, and they were grateful for the help they had had from so many other countries. Dr. RUDINESCO (France) gave a further account of the efforts being made towards reconstruction.

Dr. CHAUSSE (Switzerland) discussed the part that her country had played in helping refugees of various nationalities, and said that though Swiss people had suffered considerable deprivations, and during the early part of the war had lived in great fear of invasion, they realized how fortunate they were to have escaped the horrors to which so many other countries had been subjected, and they felt it was a duty and a privilege to give as much aid as they could in the problems of reconstruction with which the world was faced.

At the Council meeting which took place subsequently, it was decided to hold the next International Congress and Council in Holland in June or July, 1947. The subject for discussion is "The Place of Medical Women in Postwar Reconstruction."

CENTENARY OF ACADEMIE DE CHIRURGIE

On Oct. 9 the Académie de Chirurgie of Paris celebrated its centenary, and invited the Royal College of Surgeons to send representatives. The Académie is, in fact, the successor of the Société de Chirurgie founded in 1843, itself the successor of the Académie Royale de Chirurgie founded by Louis XV in 1731. A party of ten attended the centenary celebrations and was representative of the Royal College of Surgeons of England, the Royal College of Surgeons of Edinburgh, and the Association of Surgeons of Great Britain and Ireland. On Sunday, Oct. 6, the party travelled to Paris and was met at the Gare du Nord by Prof. Louis Bazy and Prof. Leveuf, who escorted its members to the Hôtel Regina in the rue de Rivoli, where they were the guests of the French Government.

Celebrations in Paris

The centenary of the Académie de Chirurgie coincided with the 49th meeting of the Congrès Français de Chirurgie, which corresponds to the Association of Surgeons in this country, and on Monday afternoon there was the inaugural session of the congress in the great amphitheatre of the Faculty of Medicine. The President of the congress, Dr. Fourmestraux, of Chartres, reviewed the history of the congress in an eloquent address, and was followed by Prof. Roussy, Rector of the University of Paris, who spoke of the happy relations which exist between the University and the medical profession in France. The opening ceremony was followed by a discussion on pulmonary embolism, led by MM. Fontaine, of Strasbourg, and Redon, of Paris. In the evening the British representatives were entertained to a banquet by the French Government in the magnificent rooms of the Maison des Alliés, formerly the house of Henri Rothschild. M. Joxe, Director-General of Cultural Relations in the Ministry of Foreign Affairs, presided and welcomed the guests in an eloquent oration. Sir Max Page replied for them in a most happy speech in perfect French. Two members of the delegation were presented with the honorary medal of the academy.

On Tuesday a discussion at the Faculté de Médecine on the conservation of the sphincters in operations for cancer of the rectum was opened by MM. de G. D'Allaines, of Paris, and de Vernejoul, of Marseilles. The material for the discussion had been most carefully prepared and covered an important field with thoroughness. New work was brought forward which is worthy of close consideration. In the evening the whole congress joined in a banquet at the Maison des Alliés. On Wednesday the discussion turned on the repair of peripheral nerves and was opened by MM. Wertheimer, of Lyons, and Merle Daubigne, of Paris. An important contribution was made by Prof. Seddon, of Oxford, and Miss Ruth Bowden. In the afternoon the British party were received at the Hôtel de Ville by the Municipal Council of Paris under the presidency of Prof. Basset, President of the Académie de Chirurgie, who reviewed at length the medical services of France and their possible developments in the future, dwelling more particularly on their relations with the Government. There followed the presentation of addresses of congratulation from the many

countries joining in the Congress. In the evening the visitors were invited as guests of the Government to the Opera, where they were delighted by a superb ballet which fully maintained the great traditions of the past. On Thursday a sword of honour was presented to Prof. Leriche on his admission as a Member of the Institute of France. It was a happy ending to a great occasion, and a pleasure to all to witness the well-earned honour paid to one of the great leaders of modern surgery.

The members of the delegation were touched by the wonderful reception accorded to them by their surgical colleagues in Paris, by their generous hospitality, both public and private, and by the deep feeling of their friendship. It is hoped that the visit may have some small share in renewing the friendship between France and Great Britain which will surely have a most important bearing on a satisfactory solution of the present problems of European stability.

SCHOOL MEDICAL SERVICE IN SCOTLAND

The Scottish Health and Education Departments have recently issued a joint circular on the School Medical Service and the regulations proposed by the Secretary of State. The Medical Officer of Health will be appointed Chief Administrative School Medical Officer so that the best use may be made of clinics and of medical and nursing staffs, but since in the case of the larger authorities he cannot attend to the details of all the services for which he is administratively responsible, the regulations provide for the appointment of a Chief Executive School Medical Officer, who would have executive responsibility for the Service under the Chief Administrative School Medical Officer. The smaller authorities are permitted, with the approval of the Secretary of State, to appoint a Medical Officer of Health to both positions. A Chief Dental Officer will be appointed to develop the School Dental Service; and dental inspections will be carried out by dental officers instead of, as heretofore, by medical officers.

Medical supervision or treatment will be available under the scheme for pupils found at inspections to require either, and they may be referred to consultants if necessary. Officers will be carefully selected for this work, particularly for the difficult task of assessing mental disability.

Preventive medicine and the promotion of good health will be studied—an aspect sometimes neglected in the past owing to pressure of remedial work. The local authorities will encourage research, obtaining advice from the universities and other responsible bodies when required.

The Secretary of State may prescribe the intervals at which medical inspections of school-children shall take place. They will normally be conducted during the usual hours of attendance at school so that as little educational time as possible may be lost and the co-operation of the teachers gained. Parents will be invited to attend routine inspections.

NATIONAL CENTRE FOR RADIOACTIVE SUBSTANCES

It has been decided to establish a national centre for the processing and distribution of radium, radon, and artificial radioactive substances required for scientific, medical, and industrial purposes.

The centre will be a Government establishment, to be operated by Thorium, Ltd., acting as agents for the Ministry of Supply. As a first step the Ministry will purchase the radio-chemical business (including buildings and plant) owned by Thorium, Ltd., at Amersham, Bucks., with the exception of the manufacture of luminous compound and other secondary industrial products. The extraction of radon, which has, during the war, been carried on at Barton-in-the-Clay, Bedfordshire, under the auspices of the Medical Research Council, will also be transferred to the new centre. In addition Johnson Matthey and Co., Ltd., are voluntarily handing over to the new centre the whole of the business of filling radium into containers which they have conducted for many years.

Additions will have to be made at once to the Amersham premises to enable the centre to meet immediate demands. The Amersham site will not, however, be large enough permanently to accommodate the centre, as it is expected that the work, particularly on the artificial substances, will expand considerably. It is intended, therefore, to remove the centre to new premises when the shortage of building labour has eased and it becomes possible to form a clearer view of the volume and scale of the work. The work of the centre (which will be closely integrated with the activities of the Ministry of Supply in the field of atomic energy) will be controlled by a Council including representatives of the Ministry, of the managing agents and of users of its products.

PRIORITY SUPPLIES OF MILK TO INVALIDS

MINISTER'S APPEAL TO DOCTORS

The following announcement was issued by the Ministry of Food on Oct. 29.

The situation regarding the supply of liquid milk in this country during the coming winter will be even more difficult than has been the case in previous winters. The world shortage of cereals has influenced the supplies of feeding stuffs available for the dairy herds while the demand for milk in the United Kingdom has increased, partly as a result of the rising birth rate, partly from the demobilization of large numbers of Service personnel, and partly from a rapid increase in the number of persons receiving priority supplies on grounds of invalidism. At present the difficulties of the supply situation are such that it will only be possible to maintain the basic ration of 2 pints weekly to the normal consumer by economizing in the milk consumption of other categories. It is, therefore, necessary that there should be a review of the arrangements under which priority supplies are granted.

Through the period of hostilities the consumption of milk by invalids in receipt of priority allowances, although it showed a slight tendency to rise, remained about 900,000 gallons weekly. By December, 1945, it had risen to 1,200,000 gallons, and a further increase to 1,300,000 gallons weekly has occurred since. There is no other evidence that there was a 44% increase in invalidism and in default of this it must be concluded that medical certification for milk priorities has become less strict.

The average consumption of milk by each invalid is 12 pints weekly, that is, 10 pints more than the normal consumer when the basic ration is 2 pints a week. A reduction in medical certification for milk priorities to the level pertaining in 1944 would save 330,000 gallons of milk weekly, an amount which, together with other savings which will be effected, would probably suffice to prevent the allowance to the normal consumer falling below 2 pints weekly.

Three Possibilities

The Minister of Food has consulted with the Food Rationing (Special Diets) Advisory Committee* of the Medical Research Council as to the measures required to effect the necessary economies. There are three possibilities. (1) The allowance of milk to individual invalids in the different categories can be curtailed. (2) The number of categories can be reduced. (3) The present categories and present allowances can be maintained but an appeal to the medical profession can be made to observe scrupulous accuracy in certification and to confine the issue of certificates to patients in the categories sanctioned. This committee advised against the first measure because they believed that reduction in the present allowances of milk to invalids would render therapy difficult. They advised against the second because they considered that the present schedule of illnesses qualifying for priority claims cannot be curtailed without excluding patients to whom milk is a therapeutic necessity. They favoured the third measure because the committee had confidence that, when the medical profession had been informed of the present situation of the country's milk supplies, they would endeavour to effect the necessary economies. The Minister has accepted the committee's advice; but it will be appreciated that the need for economy is such that if the measure proposed fails then one or other of the measures the committee deprecates might have to be implemented.

Realizing the difficulty of adopting stricter methods of certification when doubtful cases are in receipt of certificates where validity has not expired, the Minister of Food has decided that after Nov. 30, 1946, no medical certificate for priority claims on milk (whether for milk alone or for milk and other foods) dated before Nov. 3, 1946, shall be valid. It is hoped that practitioners will take the opportunity for re-certification thus provided to explain to applicants for such certificates that it has been found imperative to apply stricter criteria.

* The Food Rationing (Special Diets) Advisory Committee has the following membership: Sir Edward Mellanby (Chairman), Prof. L. S. P. Davidson, Sir Francis Fraser, Lord Horder, Dr. R. D. Lawrence, Prof. R. A. McCance, Dr. M. L. Rosenheim, Dr. Norman Smith, Prof. J. C. Spence, Prof. H. P. Himsworth (Secretary).

Reports of Societies

PROTEIN METABOLISM IN RELATION TO DISEASE

The presidential address in the Section of Experimental Medicine and Therapeutics of the Royal Society of Medicine was given on Oct. 8 by Prof. H. P. HIMSWORTH (University College Hospital).

It was a commonplace, said Prof. Himsworth, that although there were only twenty-two amino-acids for the construction of all varieties of protein, no two proteins were alike. There were subtle differences between the proteins of the same organs derived from different animals. In part the tissue differences could be related to differences in the amino-acid composition, as also could one species difference, that between human and cow's milk, but most species differences were far too subtle to be detected by chemical analysis and called for immunological tests. It was possible with the development of more delicate methods of chemical analysis that species and perhaps tissue differences would be found dependent on attached substances rather than on amino-acid composition. But each protein was characteristic and remained true to type. By altering the amount of dietary proteins the amount of protein might be altered, but not apparently the composition of tissue proteins. Imperfect and unusual proteins never seemed to be produced by the body. This had led to the assumption that the protein in the tissues was a stable structure rather than something on the same plane of metabolism as carbohydrate or fat, yet it appeared that the proteins of the body, far from being stable structures, were in a state of rapid change. Individual amino-acids were continually being broken down and the fragments built into different or similar amino-acids. It seemed as if the whole protein structure of the body at any one time were boiling with activity, yet the tissues retained their characteristic structure, and a dynamic equilibrium must exist to maintain stability of protein composition. This new view, astounding as it was, threw light on the puzzling question of labile body protein. When a starving animal was fed it retained considerable quantities of protein, but on starving it again the protein was broken down to an extent roughly equal to the amount stored. Under the old view of endogenous and exogenous protein, such protein could not be stored, and nobody had been able to demonstrate stores of protein in the body. It was true that certain cells, such as those of the liver, enlarged on repletion and shrank on starvation, but the chemical composition of the cells in respect of protein appeared to remain constant. According to the new view the ingested protein was incorporated into the mass of living protoplasm within the body, which at any particular time was adjusted to the protein intake; with decrease of intake the tissues broke down.

Protein Requirements of the Body

In considering the requirements of the body for protein a distinction must be drawn between the requirements for a particular protein when that constituted the sole source of an amino-acid, and the requirements for a mixture of protein such as occurred in normal diet. Ordinarily this was an academic question, only likely to arise in experiment or perhaps when illness had grossly limited the intake of food, in which case the amino-acid composition of the protein became of importance; but in health the protein requirements were largely independent of such considerations, the differences in the amino-acid composition of the different proteins which made up the normal diet mutually compensating for each other's deficiencies. If protein was the sole source of food it had not only to contribute to the building up and maintenance of tissue but also to serve as fuel. On the other hand, if the diet contained other adequate sources of energy then protein could be turned to its proper use, and of sources of energy in the diet carbohydrate was the best protein sparer. Such conditions apart, the special problem of general protein requirements in health came down to a determination of the extra requirements for growth, pregnancy, and lactation. In Western civilization normal adults required about 1 g. protein per kg. body weight, children up to 3 g., with women in pregnancy and lactation at intermediate figures. What was the justification for the liberal allowances of protein for the normal adult when many race subsisted on much smaller allowances? It was not a questio of absolute inadequacy but of optimal and sub-optimal nutritio Recent studies of starvation in Europe had shown that whe protein intake was greatly reduced it was quite possible t establish lactation, and the milk was normal in compositio but lactation could not be maintained for more than two o three weeks. Reports from the East suggested that races o low protein diet, when injury or infection was incurred developed complications which were not present, or presen only in mild form, in races on a high protein diet. Gro restriction of protein was required to produce illness, but mild restriction was sufficient to cause illness under strain, t common strains being growth, pregnancy and lactation, infe tions, injury, and surgical operations.

Biologically speaking, the requirements for amino-acids fe into two groups: those which had to be supplied in the di and those which had not. These were classed as essential an non-essential amino-acids. By means of tracer elements i had been shown that the body was capable of synthesizin all the amino-acids with the possible exception of lysine, b apparently the rate of production of ten amino-acids was to slow for the needs of the body and these had to be supple mented by the diet. Thus they had come to be regarded a essential, but the remainder must not be considered as optiona substances, and any one of the dozen non-essential amino-acid might in the future come to be upgraded as essential. It wa not even certain that all the ten were always essential. The reputation had been based on animal experiments concernin growth. There was some evidence that in man under certai conditions these ten amino-acids would form proteins mo effectively on injection than when whole protein was given b mouth, but that had yet to be confirmed. Analyses were avai able of the amounts of these amino-acids in diets which we normally considered adequate, but it was evident that t requirements varied, both quantitatively and qualitatively, various stages of development. Closely bound up with th question of essential amino-acids was the conception of th key amino-acid. If an essential amino-acid were removed fro the diet the body began to break down protein rapidly an continued to do so until the amino-acid was restored. appeared that definite proportions of certain amino-acids we required for the construction of any protein; if one was mis ing that protein could not be constructed and the excess amino-acid was burnt off and appeared in the urine as nitroge The missing amino-acid thus became a limiting factor, a ke component in protein synthesis.

Protein Deficiency

It was a truism that a deficiency state arose when the deman for nutriment exceeded its supply. Protein deficiency could b produced either by curtailing the supply of protein to the bo or by increasing the utilization of protein by, or loss of prote from, the body. Supplies might be restricted because o inadequate diet or conditions in the alimentary tract; increase utilization might be the result of pregnancy, fever, metabol diseases such as diabetes mellitus, injury, or operation; exce sive loss might occur because of leakage through the kidn or exudates occurring in conditions such as burns. Dietar deficiency did not ordinarily occur in Western civilizatio Starling's dictum still held good: "Take care of the calori and the proteins will take care of themselves." Whatever th calorie value of the diet, 10% to 12% of the calories was take in the form of protein. But there were Eastern races living o diets grossly deficient in protein. There, deficiency states refe able to protein deficiency occurred. The development o clinical states due to dietary deficiency seemed to be depende on the ability of the body to store the particular foodstuf Energy foodstuffs could be stored in quantity, but protein an most vitamins only to a limited extent. In famine, therefo protein deficiency dominated the picture, but in normal con tions it was usually secondary to some illness, which might b a structural lesion of the alimentary tract, a surgical operati on the tract, or anorexia, limiting food intake.

Practically nothing was known as yet about specific amin acid deficiency in man. It would be difficult for this to occ as a result of direct dietary deficiency although it might b secondary to other illness. Certain poisons combined wi

amino-acids and produced pictures which experimentally could be imitated by amino-acid deficiency. Possibly some complications developing in conditions of great protein loss, as in burns, might be related to deficiencies of certain amino-acids. Plasma proteins appeared to be formed, at least in part, by the liver. Plasma albumin and two of the globulins were certainly formed there; the source of the remaining globulins was not settled. Of the plasma proteins the albumin was most susceptible to abnormal conditions. In starvation its blood level fell relatively rapidly. If dietary intake of protein was adequate, and protein was lost from the body or there was failure to synthesize sufficient albumin, the plasma globulin steadily rose, so that the total plasma protein value might reach normal or above normal levels. The reason for this was not clear, but at least it tended to restore the reduced osmotic tension of the blood. Perhaps the most striking objective manifestation of plasma protein deficiency was oedema. Evidently oedema was most closely correlated with albumin. It was possible that when dehydration was present oedema might not be able to form, and it was a common experience that when starving patients with dysentery were brought in they had no oedema but rapidly developed it as soon as fluid was administered. But it had to be remembered that in starvation there were other deficiencies; probably also an increased capillary permeability played a part in oedemas occurring in famine.

Conditions Causing Excessive Protein Utilization

Among the conditions which produced excessive utilization of protein were fever and injury. In febrile illness there was an excessive breakdown of body protein, shown by increased nitrogen excretion and raised basal metabolic rate. Neither the fever nor the increased metabolism themselves caused this excessive breakdown. It had been loosely termed toxic destruction, but the same phenomenon occurred after a simple injury where there was no question of an extrinsic toxin's gaining access to the body. The process seemed to be a reaction of the body itself to trauma. From 12 to 24 hours after a simple fracture the nitrogen excretion in the urine would begin to rise, presently reach a maximum, then slowly return to normal, and during convalescence reach sub-normal levels. Immediately after the injury, therefore, there was an excessive breakdown of body protein, followed by a phase in which the body was storing up more protein than it was breaking down, and at the end of convalescence protein intake equated output. In the stage of active breakdown it was possible to mitigate but hardly to prevent the excessive excretion of nitrogen by increasing the dietary protein, but as the breakdown diminished it became correspondingly easy to promote nitrogen retention.

Nitrogen breakdown was augmented by immobilizing the patient. Several suggestions had been made as to the significance of this phenomenon. That it was by no means negligible was shown by the calculation that in the first ten days after a simple fracture nitrogen corresponding to more than 8% of the total body protein might be excreted—i.e., more than four times the amount of protein contained in the liver. Clearly if all that protein destruction had occurred at the site of the injury it could not have escaped detection, but the body structure as a whole seemed to be involved. It had been suggested that this was to provide the large amounts of amino-acid required for the healing of the injury, and implicit in that suggestion was the idea that certain key amino-acids were required for healing, that these were produced by breaking down of body protein, and that the other amino-acids not required by the tissues were rapidly burnt off and accounted for the increased nitrogen excretion. There was still doubt as to the mechanism of the phenomenon. The practical lesson was, before operation, to remedy any protein deficiency. In acute illness protein intake must be maintained at a reasonable level, but there was no point in pushing it to excess. As soon as the illness began to improve protein should be pushed, because apparently this shortened the period of negative nitrogen balance. Those who had followed high protein regimes during convalescence were impressed by the increased well-being of the patients. He touched on protein metabolism in relation to liver injury; it seemed clear that protein deficiency could lead to liver necrosis. Necrosis produced by lack of cystine was what was called acute yellow atrophy and in survivors went on to a fibrotic condition of the liver.

In concluding his brief survey, which was delivered to an overflowing audience, Prof. Himsworth said that many subjects of clinical interest had been omitted—the effect of protein depletion on the development of immune bodies, the toxic action of excessive doses of amino-acids when given in association with low protein diets, the therapeutic use of protein hydrolysates or mixtures of pure amino-acids—but he hoped he had said sufficient to show that the problems of protein metabolism in relation to disease were now under intensive study and to indicate some progress which had certainly been made.

FOOD POLICY

A conference of the Nutrition Society on "The Work and Aims of the Food and Agriculture Organization" was held on Sept. 21 at the London School of Hygiene and Tropical Medicine. Sir JOSEPH BARCROFT presided.

Mr. D. LUBBOCK, speaking on "Nutritional Aspects of the World Food Picture," outlined the history of F.A.O. since its inception in October, 1945. The first objects had been to raise the level of nutrition of the peoples of the world, to improve the production and distribution of food, and to secure better living conditions for those engaged in the production of food. These demanded a long-term policy, and the first activity of the organization was to seek the guidance of nutrition experts and various official bodies in the collection of data on the amounts of food consumed in various countries before the war. A "yardstick" would thus be made available for measuring the after-effects of the war, and for assessing future progress towards better standards of nutrition. Early in 1946, however, reports from U.N.R.R.A. and other bodies responsible for finding food for the war-stricken areas indicated that, in addition to the usual chronic deficiency of food in certain areas, the world was about to experience an acute temporary shortage of supplies. In May a special meeting of F.A.O. was held in Washington, and the situation was greatly eased by persuading the wheat-producing countries to increase their exports, and by discouraging the extravagant use of wheat for feeding to animals or for milling into flour of an unduly low extraction rate.

It was realized that the urgent shortage was not merely a 90-days crisis, as had been expected, but that in the spring of 1947 the situation might be even worse. International co-operation was obviously necessary to avoid the farmers' fear of surplus production with consequent collapse in prices, which tended to limit the output of the agricultural community. In view of the urgency of this problem the annual conference of F.A.O. was held two months earlier than had been scheduled, and in September delegates from many nations met at Copenhagen to discuss proposals for the formation of a World Food Board.

Need for Expanding Economy

The choice of policy for food production lay between two alternatives. We might, as before the war, have a static economy, in which production would be limited by the power of populations to purchase food. Future prosperity, however, must depend on an expanding economy, in which production would aim at improving the nourishment of both rich and poor nations throughout the world, with the solution of financial difficulties by international agreement. The amount of surplus which under present conditions would cause a disastrous slump in prices was in reality only a small fraction of the food urgently required by the undernourished populations. A preparatory commission was therefore considering a plan, to be ready before the end of this year, which would have as its main points: (1) the assurance to the farmer of steady world prices for his commodities; (2) the accumulation of world reserves of wheat and other commodities to tide over future periods of emergency; (3) the provision of funds for financing the disposal of surplus agricultural products on special terms to countries where the need for them was most urgent; and (4) the development of food production in backward countries where there was at present severe undernourishment.

It would obviously be impracticable, except in the far distant future, to bring all nations to the same standards of nutrition. Most nations had well-established "food patterns," based on inherited custom and religion, which must be respected in

planning dietary reforms. A survey of national food supplies, covering 70 countries and 90% of the world's population, had indicated that very wide differences existed. Thus the average food intake in Korea was 1,900 calories daily, but 3,300 calories in New Zealand. Moreover, while large amounts of milk were consumed in some countries, such as Britain and America, negligible amounts were available in other countries, such as China. Every country must therefore have its own target for immediate improvement. The consumption of one pint per head of fresh milk might be a reasonable aim in Britain, but the most that could be expected for China was the introduction of a minute "token" amount of milk into the diet, probably mostly in the dried form.

While therefore F.A.O. saw its most urgent task in raising the levels of nutrition in backward regions, it was obvious that in many countries salvation must be sought in increased agricultural efficiency rather than in surplus food produced in other countries. Such increased efficiency must be encouraged by expert advice supplemented by material help, and F.A.O. proposed that missions including an agriculturist, a nutritionist, and an economist should be sent to countries requiring their services. Experience had already shown that when the food supplies of any nation fell below a certain level there was a tendency for organized government to break down. The principles advocated by F.A.O. to secure better nutrition and increased prosperity throughout the world might be our only hope for the prevention of war.

Nutrition Programme of F.A.O.

Dr. W. R. AYKROYD said that the Organization had among its aims: (1) the collection and dissemination of expert information on nutrition, food production, and agriculture; (2) the co-ordination of national and international action; and (3) the promotion of research, education, and the spread of public knowledge on these subjects. A standing committee including eleven members from various nations, with Lord Horder as chairman, had been set up to give advice on nutritional problems. It must be made clear, however, that F.A.O. could not finance research, that it had at present no executive power, and that its staff was necessarily small because of the very limited supply of experts available for service. To obtain results, therefore, it must rely upon its powers of persuasion and the willing collaboration of other interested individuals and organizations.

The various forms of action which F.A.O. could take might be aptly illustrated by considering the problem of school meals. In the first place the organization might pass a high-sounding resolution—e.g., "The nations here represented agree that a satisfactory diet is the birthright of every child, and recommend that immediate steps should be taken to ensure that this problem receives due attention on the part of the educational authorities." In the absence of concrete suggestions and more direct stimulation, however, it was unlikely that much effective action would be taken by the authorities concerned. A second plan might be to summon a committee of nutrition workers to discuss the problem, but few experts were so widely travelled as to be familiar with food supplies and habits in all the countries of the world. Perhaps the most effective action, therefore, would be to make arrangements for investigations into the feeding of school-children to be carried out in different countries, with attention focused on definite points, such as the details of organization, the food supplied, the costs, and the effect on the children's health.

The secretariat of F.A.O. had great responsibility in formulating problems and in preparing material for conferences in a form that would ensure their success. The recent world food survey had shown that much secretarial work was necessary in comparing estimates from different sources, and that great disparities might arise from alternative methods of calculating nutrient values and in the use of different food tables and conversion factors.

Among the special interests of F.A.O. were the milling and processing of cereals, food technology, and the effects which wartime food programmes had had on the public health in various countries. Another activity was the compilation of a list of the world's nutrition workers, which should be of use when it was necessary to recruit volunteers for special F.A.O. missions. Although the organization would draw largely on the help and interest of other bodies, however, it would not merely act as a "post-box" but would have its own team of technical experts. Since the newly formed World Health Organization was also to have a nutrition division its activities ought to be correlated with those of F.A.O., and a joint committee of the two bodies would deal with such subjects as deficiency diseases, standards of nutrition, and the control of the quality and purity of foods, which were of common interest. Under present conditions the people of some fortunate countries were well nourished on food produced by a small proportion of their population. In others the toil of almost the entire population was insufficient to yield an adequate amount of food.

Need for Processed Milk

Miss E. FAUTZ discussed this special problem. Since F.A.O. had recommended that the world's milk supply should be doubled, it was important to explore the implications of this policy, particularly in countries where all available food was now required for direct consumption by human beings, and could not be spared for dairy cows. In such countries much benefit might be derived from the importation of processed milk, particularly dried skimmed milk. The demand for milk products might well be stimulated by propaganda and by suggestions for their incorporation in manufactured foods, while their purchase in necessitous countries might be facilitated by financial loans or by grants during the next three years from the U.N.R.R.A. Children's Fund. An increase of milk products would improve nutrition in the West Indies.

Sir JOSEPH BARCROFT among other speakers, in an informal discussion, spoke highly of the nutritive value of various forms of dried milk. In his opinion F.A.O. was not sufficiently well known to the general public. More public interest might be aroused if the Organization had executive rather than exploratory powers. The Government was fully pledged to implement its decisions, which would then have immediate and direct effects on our weekly food rations. It could not be denied, however, that some "economic smoothing out" was essential, and he hoped that F.A.O. would soon be able to report progress on the reactions of Soviet Russia to its policy. The Nutrition Society should be told of ways in which it might help the work of F.A.O.

CAUSES AND PREVENTION OF PREMATURITY

A meeting of the Paddington Division of the B.M.A. was held at the County Hall (L.C.C.) on Sept. 24, with Dr. G. DE SWIET in the chair, for a discussion on "Prematurity: Causes and Prevention." The CHAIRMAN said that in Paddington twelve or thirteen years ago the infant mortality was the highest in London; the spectre still haunted them, and unless constant efforts were made there was always the danger of a return to that position. Prematurity accounted for about one-fourth of infant mortality, for about half the neonatal deaths, and half the stillbirths. Its prevention was a problem of major importance. Mr. R. LOVELL (pathologist to the Royal Veterinary College) discussed certain veterinary aspects. In the dairy industry the mortality of calves resembled infant mortality in the respect that the reduction had obtained at the older ages, while the hard core—nearly half the calf infantile mortality being in first week—in the very young remained.

Obstetric Indications

Prof. F. J. BROWNE (University College Hospital) said that the League of Nations Committee in 1937 recommended that any infant weighing 2,500 g. (5½ lb.) or less should be considered premature irrespective of the duration of gestation. About 5% to 8% of all births were premature, and prematurity accounted for 50% of the 20,000 neonatal deaths. Stillbirths were about ten times as frequent in premature as in full-time deliveries. Study of the case sheets of 100 premature births in University College Hospital, showed no cause in 53; in 13 there was multiple pregnancy, and in 13 toxaemia. Any serious attempt to reduce the number of premature births must begin with an attack on the high incidence of prematurity from unknown causes. Consideration should be given to social conditions and especially to deficient diet. In the group in which prematurity was associated with an abnormality in mother or child, little was possible, in the present state of knowledge,

prevention of the premature births. A great deal could be done by making more antenatal beds available. The admission of patients with ante-partum haemorrhage to hospital as soon as the first warning occurred would result in a great diminution of the premature and stillbirth rate. The early diagnosis of toxaemia and institutional care would enable many cases to go to term when otherwise intrauterine death and premature labour would result. Instrumental termination of pregnancy should if possible, in those cases in which it was necessary, be delayed until the end of the 37th week as it would make all the difference to the chances of survival.

Eugenic Considerations

Prof. L. S. PENROSE (University College) said that prematurity and mental retardation were correlated and that intracranial cerebral haemorrhage might be the cause. Paediatric authorities were convinced that cerebral diplegia was mainly due to intracranial birth trauma. Observations at Queen Charlotte's (Martin, 1931) showed that the duration of pregnancy averaged 278.3 days (with a standard deviation of 16.4 days) but ranged from 195 to 360 days. There were more than twice as many premature as postmature babies, so some common specific causes of prematurity might be postulated. One of these causes was the occurrence of multiple births; twin pregnancies terminated, on the average, 15 days, and triplet pregnancies 24 days, earlier than the normal. Factors in the paternal sperm were considered as causes of premature delivery. Icterus neonatorum was, in most cases, due to the fact that the foetal blood contained an antigen, received from the father, which the mother did not naturally possess and to which she formed antibodies. Antigenic incompatibility of foetus and mother was undoubtedly a cause of infant mortality, and miscarriages and premature births were part of this picture.

Dr. LETITIA FAIRFIELD said that the fundamental gap in their knowledge concerned the factor which set up the process of expelling the child from the uterus after an average period of nine months. There were so many unknown influences in gestation that its duration was largely in the region of guesswork and not of scientific ascertainment. Dr. C. L. WILLIAMS said it was important that during the later months of pregnancy the woman should do nothing involving physical strain, especially the use of the hands above her head, as it was by attention to small things like that that the 50% neonatal deaths due to prematurity would be reduced. Dr. DE SWIET, in closing the discussion, suggested that the role of the male parent might have to be more emphasized. It might be necessary to deal with the "expectant father" and to enter the realm of preconceptional care, and Prof. BROWNE commented: "A valuable discussion, and it shows that we do not know anything at all about the subject!"

As announced last week, an extraordinary meeting of the members of the Liverpool Medical Institution was held on Saturday, Oct. 19, with the President, Dr. G. F. Rawdon Smith, in the chair. Addressing a large gathering of members, the President stated that the meeting had been called for the purpose of conferring Honorary Membership of the Institution on six eminent members of the medical profession, Dr. Alfred Ernest Barclay, Sir William Allen Daley, Dame Anne Louise McIlroy, Prof. Charles McNeil, Dr. Ivan Whiteside Magill, and Sir Alfred Webb-Johnson. Dr. Robert Coope acted as orator for the occasion, and introduced the new Honorary Members severally. They were then formally admitted by the President, and each made a brief reply, expressing appreciation and thanks to the members. In the evening, the Honorary Members, together with the Lord Mayor of Liverpool and other official guests, were entertained to dinner at the Exchange Hotel.

The Hunterian Society's programme for the session 1946–7 includes a discussion at Apothecaries' Hall on Nov. 18 at 8.30 p.m., "That the advertisement of proprietary medicines is a menace to the public." On Dec. 16, at a dinner meeting at 7.15 p.m. at Pimm's, 3, Poultry, E.C., Dr. Geoffrey Evans will open a discussion on "Flatulence." On Jan. 20 Prof. Debaiseux, of Louvain, will give the Hunterian Lecture on "Hypotension in Intracranial Injuries" at the Mansion House at 8.30 p.m. On Feb. 24 Mr. V. Zachary Cope will give the Hunterian Oration on "Literature and Doctors" at the Mansion House at 8.30 p.m. On March 17, at a dinner meeting at Pimm's at 7.15 p.m., Sir Reginald Watson-Jones and Dr. J. B. Mennell will open a discussion on "Sprains and Strains."

Correspondence

Selection of Medical Students

SIR,—Prof. D. H. Smyth's admirable general discussion of problems of selection in the case of medical students, and your comments upon his article (Sept. 14, pp. 357 and 375), make it exceedingly clear that the time has come when these problems must be taken seriously. It is very likely that some agreed methods ought to be put into practical operation without delay, but it is quite certain that the really urgent need is for a well-planned and large-scale investigation in which as many as possible of the medical teaching schools and hospitals would co-operate and in which medical men and psychologists would join, each side with a genuine willingness to understand and appreciate the perhaps somewhat different points of view that are involved.

Prof. Smyth rightly points out that a large amount of valuable experience in regard to selection methods and problems has been accumulated during the war. A brief but definite statement of the main practical conclusions that are generally agreed seems now to be desirable, and it is such a statement that I will endeavour to make.

1. No system of initial selection is likely to get beyond the stage of debate unless its results can be systematically and accurately checked against independently determined proficiency criteria. If possible, obviously such criteria should be capable of objective determination, but some progress has been made towards the establishment of a reasonably reliable technique based upon informed assessment, and there is certainly far more hope that such a plan may be satisfactorily established in suitable cases than could have been predicted six or seven years ago.

2. As things are there is almost no operation, trade, or profession having any major importance in civil life for which adequate proficiency criteria have been established. Prof. Smyth's remarks show that no such criteria are agreed upon in the case of medicine, and that if suitability for the practice of medicine "as a whole" is taken as the aim the chance of ever establishing such criteria in a practical sense is small. His own conclusion seems to be the only possible one—i.e., that a few qualities which offer a reasonable chance of being amenable to test and validation procedure should be picked out and made the basis of the more routine or formal aspects of selection. This does not, of course, ignore the other aspects of selection, but war experience has shown many times over that it lightens and often improves the work of those responsible for their consideration. Perhaps Prof. Smyth goes farther than is necessary when he seems to imply that routine selection should be limited to dealing with intelligence only; but this is a matter for discussion.

3. It is quite clear that the primary function of intelligence tests in relation to the professions is at present that of exclusion. As regards some vocations it has become clear that they will tolerate a range of intelligence above as well as below which prospective candidates are little likely to achieve success. He would be a rash man who would assert that there is an upper limit of tolerance in the case of medicine, but everybody agrees that there must be a lower limit, and though this has not yet been settled it ought to be not difficult to determine it by a well-planned investigation, and meanwhile a rough working limit could be achieved and used. It is essential that such a limit should be used intelligently and in conjunction with the less formalized aspects of selection, because for validation purposes it is obviously necessary that a sufficient number of cases should be available for "follow up" who do not in fact make the proposed grade for formal selection.

4. Every important war investigation has shown that it is impossible to separate selection from training. A good selection scheme can be ruined by a bad system of training. A bad selection scheme can, within limits, be bolstered up by a good system of training. It has turned out with truly astonishing monotony that training schemes can be as completely divorced from subsequent operational success as a plan of initial selection can be. Indeed several times over it has been found that initial selection methods which do not agree with training grades do agree far better with eventual operational success. The importance of this, which can scarcely be exaggerated, is that where good operational criteria are lacking there is an inevitable tendency to judge selection methods by the relation of their results to training grades. This may be extremely misleading and unfair.

So serious did problems of this order become, for example, that towards the end of the war a number of investigation teams in the U.S.A. who had been concerned with primary selection were forced to turn their attention wholly to training methods and training

assessments and examinations. Some astonishing facts came to light. Training methods and courses are very often indeed a hodge-podge of different devices. There may have been a good reason for every one of them when it was introduced, but they have come in at all sorts of different times and for all sorts of different reasons and purposes. Training schemes are far more often over-loaded than under-loaded, and it is very common to find candidates kept for a long time learning things that the general run of them can perfectly well master in a short time, and for a short time on things which require more prolonged study. The result is staleness in some directions, under-training in others, and that most curious state of affairs in which it is accepted that a candidate's training must almost begin all over again when he goes from the school to his eventual career. In this country the only case I know of a thoroughly validated selection procedure from first to last was one in which selection and training were treated as a single problem. I can see no hope at all for a really successful issue to primary selection in the case of medicine unless medical authorities are prepared to submit existing training methods to a radical investigation and to take a very open-minded part in such investigation themselves.

5. It has become clear that follow-up technique and testing technique are not the same and in a serious investigation should almost certainly be the concerns of different groups. In general the more any type of investigation requires field study the more important it is that a leading part should be taken by people with interests, knowledge, and skill relevant to the field concerned. Whereas the kind of testing which is now under discussion is very largely a technical psychological problem, the follow-up is mainly a matter which is best directed by medical personnel. Fortunately there are now an increasing number of the latter who have also a satisfactory training in normal and experimental psychology. It is this kind of training which is required. Doubtless there are also psychiatric problems involved in the initial selection of medical students, but on the whole, though there is no complete agreement, the weight of recent experience is heavily against mixing up the psychiatric with the normal problems of selection.

6. Tests of intelligence in a general sense, as distinguished from those which have to do with highly specialized skills whether mental or bodily, must employ a variety of principles and a variety of media. The media commonly used are words, numbers, and visual—usually geometrical—forms. All three are required. The principles must include both structural and relational factors, and these have to be treated both analytically and constructively or synthetically. No set of tests which are merely repetitions of the same pattern of problem presented in varying complexity can be regarded as satisfactory.

7. There is impressive evidence, not as yet given much publicity, that the type of intelligence which deals efficiently with the symbols of words, numbers, and visual forms has no necessary relation to another type which deals directly with complex situations in terms of the immediate data of those situations. It seems highly probable that the latter type of intelligence may be very important for certain aspects of the practice of medicine, especially in regard to clinical skill. Any long-term investigation of the value of intelligence tests in initial medical selection should give due regard to this.

These are, I think, the main principles that have emerged from the work of the last few years. There are in addition a great many details which need attention and trial. It is not improbable that several of the conventions which, for very good reasons, are usually observed in the design and presentation of intelligence tests may undergo change. Some of these, for example, are the arrangement of test items in a regularly increasing order of difficulty, the use of one-way questions and answers only, and current practices about time and speed setting. These and other matters, including some of the statistical measures commonly demanded, should not be taken as settled finally.

Further, Prof. Smyth is certainly incautious in one respect. The assertion that coaching and practice make no difference to test verdicts runs a long way beyond established facts. But nobody yet knows for certain what exactly are the implications which the undoubted results of training and practice may have for intelligence test scores.

The practical conclusion seems to me to be this: the time is ripe for setting up a small but influential body of medical doctors and of psychologists with the necessary resources to implement any decisions they may make after discussion. This body should aim at a long-term policy of investigation and also at a short-term policy for immediate, but provisional, application. The latter ought not to be at all impossible provided the probable ratio of candidates to places in those medical schools which would take part in it is known.—I am, etc.,

The Psychological Laboratory, Cambridge. F. C. BARTLETT.

Classification of Psychological Disorders

SIR,—Instead of criticizing each other on the problems of nomenclature would it not be better if we frankly admitted that it is not possible to pigeon-hole every patient neatly under some simple diagnostic label? This is not the fault of psychiatrists but is due to the complexity of human nature, which exhibits infinite variations. The unique individuality cannot be stretched so as to align accurately upon one of a limited number of Procrustean patterns. By all means let us teach students the distinguishing features of "typical reactions"—depressive, hysteric, anxiety, and so forth—but let us also insist that in a considerable number of cases we have to deal with "mixed reactions," because personalities are mixtures of many artificially separated types.

With the neurotic it is far more important to obtain a complete record of his biographical development than to label a small cross-section of his life. A psychiatrist who is able to say, for example, that the patient is reacting to frustration of occupational ambitions and a state of marital disharmony in accordance with certain behaviour patterns conditioned by various childhood and adolescent experiences is being more practical, and will be able to do something far more useful for his sufferer, than any pundit who is happy only when he can exhibit a clear-cut diagnosis. It is unfortunate, therefore, that some of our over-enthusiastic E.C.T. exponents seem to consider it more important to attach hastily a diagnostic tag to their patients than to make a painstaking study of life histories; hence the statistical fallacies concerning which Dr. Dillon very rightly issues a timely warning (Oct. 19, p. 588).—I am, etc.,

Basingstoke. I. ATKIN.

Goitre without Bias

SIR,—Few there are, I think, who would deny that surgery as performed by an expert is the method of choice in the treatment of thyrotoxicosis. Nevertheless there are some features which call for discussion. In the first place I am sure that the average doctor would require a lot of convincing if he were told that all the mild adolescent colloid goitres he sees should be submitted to surgery. He would look back across the years and ask himself how many of these goitres have really become toxic, and how few indeed have become malignant. In support of this idea Garlock[1] states that about 2% of thyroid enlargements are malignant, and he informs us that Smith, Pool, and Olcott[2] emphasize that it may be that undue weight is being attached to the probability of cancer developing in an adenoma. He remarks trenchantly:

"As one reviews the statistics of three or four decades ago when goitre operations were unusual and patients harbouring adenomata did not accept surgical intervention as freely as to-day, one is impressed by the fact that few cancers of the thyroid were noted, far fewer than would be expected did adenomata present the marked tendency towards malignancy which is generally assumed to-day."

Turning back the pages, we find that in Allbutt and Rolleston's *System of Medicine* it is stated that 50% of patients recovered completely on rest and sedatives, while Osler[3] informs us that "Statistics are misleading, as only the severe cases come under hospital treatment. Probably 65% of the patients make a good recovery, and 10% to 12% die." It is well perhaps to remind ourselves that a majority of patients did recover by various methods of treatment, while admitting that these results did not compare with good modern surgery.

With regard to thiouracil, and the new methyl and propyl derivatives which are much less toxic than the former, it is surely too early to condemn them out of hand. It is true to say that many patients have shown complete remissions, which have lasted so far under the administration of these compounds combined with rest in bed for a few weeks at the outset. Admittedly it does require a lot of experience to determine which patients may be suitable for medical measures, and above all when to advise operation so as to give the surgeon a fair chance. Much could be said did space permit on the question

[1] Nelson's *Loose Leaf System of Medicine*.
[2] Smith, L. W., Pool, E. H., and Olcott, C. T., "Malignant Disease of Thyroid Gland: a Clinico-pathological Analysis of 54 Cases of Thyroid Malignancy," *Amer. J. Cancer*, 1934.
[3] *Text Book of Medicine*, Osler and McCrae.

of diagnosis, but the all important thing is to bear the condition in mind, especially where there is undue nervousness with restlessness, unexplained wasting, or diarrhoea, or the presence in mid-life of tachycardia or an abnormal rhythm. The difference in the response to iodine and methyl-thiouracil on the one hand and sedatives on the other may be strikingly suggestive; and lastly in the few as yet undetermined cases we should remember Osler's dictum, "Diagnosis in the borderline cases depends more on careful study and observation than on any single test."—I am, etc.,

Clifton, Bristol. FREDERICK SUTTON.

Carbon Dioxide Absorption

SIR,—Mr. A. Charles King (Oct. 12, p. 536) gives an interesting historical survey of anaesthetic apparatus, in the course of which he states: "In 1932 the first apparatus proper in this country was made for Frankis Evans, and this was followed by alternatives designed by Shipway, Harris, Halton, Primrose, Gillies, and others."

On reading this, I referred to my own records on this matter and find that I have a patent specification applied for on Oct. 16, 1931, No. 391,176, covering circuit breathing combined with an inflatable pharyngeal tube. A further patent specification, No. 419,679, dealing with to-and-fro breathing was applied for on June 30, 1933. Messrs. Barr and Stroud made my third machine, which was ordered from them on April 8 and delivered on May 20, 1932. The fifth machine of my series, home-made, was described at a meeting of the Anaesthetic Section of the Royal Society of Medicine, I think in the spring of 1934, while a subsequent machine was that used at the Annual Meeting of the British Medical Association held at Bournemouth in 1934.

I offer these facts as supplementing what Mr. King has given from his records, and should it turn out on investigation that a prior claim has been established through these facts, then the Glasgow Royal Infirmary must be regarded as the home of carbon dioxide absorption technique as at present practised.—I am, etc.,

Glasgow Royal Infirmary. W. B. PRIMROSE.

Recent Advances in Anaesthesia

SIR,—In Dr. Langton Hewer's most interesting article (Oct. 12, p. 531), I note that he dates recent advances as those occurring between 1914–18 and the present time. He is thus able to do full justice to the advances in premedication, to the new volatile anaesthetics, to technique and apparatus, and even to the most recent adjunct to anaesthesia, curare. It is therefore all the more surprising that no reference whatever is made to intravenous anaesthesia, which has almost supplanted the older methods in certain types of operation—for this great advance was made within the period specified.

Jarman and Abel (*Lancet*, 1933, **2**, 18) appear to have been the first in this country to describe the use of evipan; Dickson Wright (*Lancet*, 1935, **1**, 1,040) drew attention to his apparatus for giving intravenous anaesthesia; and finally Jarman and Abel (*Lancet*, 1936, **1**, 422 and 600) give an account of the action of pentothal sodium in over one thousand cases. I feel that to complete your account of recent advances in anaesthesia these facts should be added.—I am, etc.,

London, W.1. J. JOHNSTON ABRAHAM.

John Snow—Anaesthetist and Epidemiologist

SIR,—In praise of Snow's perspicacity your contributor (Oct. 12, p. 535) writes, "Where Snow was in advance even of Farr and Simon was in his firm conviction that the ingestion of water polluted with a presumably living contagium was the *only* method of epidemic dissemination." I fear that the emphasis given by the italics may tend to deprive Snow of credit for that other remarkable and original, but less well known, inductive inference relating to the epidemiology of cholera which H. Harold Scott in *Some Notable Epidemics* records as follows:

"Yet another shrewd observation of Dr. Snow. A friend told him that, having placed in his room in summer when flies were abundant an infusion of quassia to kill them, he could often taste the bitter quassia on his bread-and-butter. If then flies could convey quassia from a saucer to food they could as readily transfer fragments of cholera dejecta present on linen. He cited this as another possible mode of contracting infection."

—I am, etc.,

London, S.W.5. IAN E. MCCRACKEN.

SIR,—"It may not be generally realized how profound were many of Snow's views" writes Mr. Charles King (Oct. 12, p. 536), and the otherwise excellent Anaesthesia Number of the *Journal* does little to remedy this. In the column written on John Snow, only half a paragraph refers to his work in anaesthesia. Of the pioneers, none contributed so much, in observation or theory—the first to record the sign of intercostal paralysis and the first to postulate interference with oxygenation as the cause of narcotic action; in practice—the expiratory valve, wide-bore tubing, warmed ether bath, and "safety" chloroform inhaler; and in experimental work—forty-two pharmacological animal experiments, using, besides ether and chloroform, ethylene, amylene, refrigeration, and even endotracheal intubation. Again quoting Mr. King: "The idea of the carbon dioxide technique had entered the fertile brain of John Snow." Yet he died in 1858, only twelve years after Morton's demonstration.

By reprinting *Snow on Cholera* America has made sure that his fame as an epidemiologist will live. In this centenary year, could not a British house be persuaded to republish the all too rarely seen *On Chloroform and Other Anaesthetics*?—I am, etc.,

London, S.W.16. JOHN IVES.

Penicillin Injections and the Boiling of Syringes

SIR,—One is alarmed at the letter by Dr. P. Finch (Oct. 19, p. 589) who, because he is informed that ethyl alcohol does not inactivate penicillin, states that he is employing industrial spirit for syringe sterilization as boiling wastes a lot of time. One of the lessons that should have been learnt from World War II is that syringes cannot be sterilized adequately by fluid disinfectants and that when such methods are used syringe-transmitted hepatitis becomes rife, especially when intravenous injections are being employed. By early 1944 the jaundice rate in syphilis patients attending Service venereal disease clinics had reached a very high percentage and was only controlled when the boiling of syringes was made compulsory. The incidence of syringe-transmitted jaundice is much lower after intramuscular injections, but cases following penicillin therapy are far from unknown and will become more frequent if the precaution of boiling is in any way relaxed.—I am, etc.,

A.M.D. 10, War Office, S.W.1. R. R. WILLCOX.

Potency of Penicillin

SIR,—Penicillin has now become a commonplace and is used by thousands of doctors. It is admittedly the greatest advance in treatment of many bacterial infections that formerly were regarded as almost hopeless, and in lesser degrees of infection markedly shortens the period of recovery and convalescence. But there is one snag. There is no test that the ordinary practitioner can use to determine whether any given sample of penicillin has or has not lost its potency. We are told that under certain conditions of temperature watery solutions will remain active for 3–4 days and that oily solutions will last a week. But this is not definite enough and I am convinced that much inactive penicillin is being both injected and inhaled, thus often causing great disappointment. I hope some simple test of efficacy will soon be discovered and described.—I am, etc.,

London, S.W.1. DESMOND MACMANUS.

Transmesenteric Hernia

SIR,—Dr. R. B. Leech's letter (Sept. 7, p. 339) on the subject of mesenteric hernia adds yet another example to the ever-increasing list of reported cases. With the cases of Peter Martin (*British Medical Journal*, 1946, **1**, 238) and James Moroney (Ibid., 329), the views I expressed on the aetiology (*Brit. J. Surg.*, 1944, **31**, 275) are confirmed in that all three patients showed a defect of the mesentery near the caecum,

with smooth and regular margins, and apparently without the surrounding vessels' showing evidence of previous thrombosis or injury. This is the "Treves's field," as described by him in 1885 (*British Medical Journal*, 1885, **1**, 470). Mr. Martin states that trauma and inflammation are aetiological factors, but this is very much a minority view, the general opinion being that the hole results from a developmental fault, and that intestinal movements ultimately, though not inevitably, cause a knuckle of bowel to pass through and initiate the obstruction.

Neither Mr. Martin, Mr. Moroney, nor Mr. Leech mentions any relevant previous history of abdominal injury or disease in any of their patients, which again supports the view of a congenital origin. I am quite sure that trauma sufficient to cause a breach in such a thin yet strong membrane would have to be (*a*) localized and crushing, and (*b*) of considerable force, with inevitable severe injury to surrounding tissues—such as bowel rupture and vascular damage. Again, I can conceive of no tearing injury applied to the mesentery which, if sufficient to cause a localized tear, would not also result in widespread mesenteric rupture with accompanying haemorrhage. Inflammation could only cause such a defect by localized adherence of some inflamed organ to the mesentery, followed by sufficiently violent peristaltic movements or trauma to tear the viscus off either with a small attached portion of mesentery or leaving behind a slit. Again, this has to occur without vascular damage, and has to leave a smooth margined defect with no thickening or irregularity of its edges, and without surrounding adhesions or bands, to concur with the conditions found at operation in all these cases.

Careful consideration therefore of trauma or inflammation in a causatory role leads us to reject both as quite impossible, and I submit that all such mesenteric defects are congenital in origin. I feel that this opinion is confirmed by the occasional finding of such defects without other related pathology in post-mortem examinations of persons dying from other causes—e.g., Watson's 3 cases in 1,600 necropsies. May I point out to Mr. Martin that his case is not the 49th on record but at least the 78th.—I am, etc.,

Woking. E. G. DOLTON.

"Cord Round the Neck"

SIR,—The recent correspondence on this controversial topic justifies a report of yet another case of stillbirth attributable, presumably, to "cord round the neck."

I was called in by a midwife because of delay in the second stage of labour. The patient was a primipara, 27 years of age. Antenatal supervision had been adequate and periodic B.P. and urine tests revealed no abnormality. There was however some oedema of both ankles during the later weeks of her pregnancy, but the patient was otherwise in excellent health. There was no obvious pelvic disproportion, and the presentation was a vertex. She went into labour on the calculated date of delivery. When I saw her she had been nearly five hours in second stage. She was having good pains and strong contractions every five minutes, but once the head reached the perineum its subsequent progress was slow. Time after time a good contraction caused the *caput* to appear, only to disappear tantalizingly on the cessation of the pain. It seemed as if something was hindering the downward progress of the head, and when the neck was palpated a single loop of feebly pulsating cord was found tightly wound round it and incapable of being slipped off. A finger was insinuated with difficulty between the neck and the cord and the latter immediately divided between ligatures. The child was delivered shortly afterwards. The foetal heart rate just prior to delivery was 120 per minute. Despite the adoption of the usual methods of resuscitation, the child never took a breath, though the heart continued to beat for at least 30 mins., 100 per minute at first and then gradually less. There was no mark of constriction round the neck, and the face and body were pale. There was no congenital malformation of the upper respiratory passages. The cause of death was presumably pressure on the cord and consequent asphyxiation of the child before delivery. The cord was of average length, and the placenta and membranes normal and complete. There was no perineal tear.

It is unjustifiable on the basis of a single case to attempt to lay down hard and fast rules regarding the early recognition of this anomaly, but three suspicious signs may be of value, namely: (1) Undue delay in the second stage of labour in an apparently straightforward case. (2) A diminishing foetal heart rate. (3) The appearance and disappearance of the *caput* with but little downward progress when the head is well down on the perineum. The early recognition of "cord round the neck" and the application of forceps might conceivably save the child, but one feels that, for the occasional obstetrician at any rate, once the diagnosis is made it is probably too late to do anything except sever the cord and deliver the child as speedily as possible, with or without instrumental assistance.—I am, etc.,

Glasgow. LESLIE R. C. AGNEW.

Smallpox in the Vaccinated

SIR,—In regard to smallpox in the vaccinated, Dr. F. K. Beaumont's (Sept. 21, p. 437) and Dr. C. Killick Millard's (Oct. 12, p. 552) comments seem to me most helpful and sound. The latter proposes annual revaccination for those in repeated contact with smallpox cases. May I support this out of an experience of eight years with Europeans in India?

In a population of some 500 Europeans living in an Indian industrial town, where smallpox was as everyday and as common as a sore throat, it was our practice annually to revaccinate the whole population at risk. There was no case of smallpox in these people, not even modified smallpox, but when the war brought imperfectly protected vaccinated persons from England among us these unfortunates were in grave danger, and there were some appallingly bad clinical cases of smallpox. One such case, of confluent smallpox, was vaccinated in infancy (scar not visible) and had a certificate of three negative results from vaccination done before leaving England.

It is of course not practicable to vaccinate and revaccinate the whole population of Britain annually, but I suspect that to follow the modified course of doing it every five years would end the worries of the public health people about introduced epidemics.—I am, etc.,

Edinburgh. J. ROSS INNES.

SIR,—It is refreshing to find Dr. Killick Millard advocating more frequent vaccination. In the early days of the century he was claimed by the Anti-Vaccination Society as their chief supporter in the medical world, although I remember hearing him at that time open a meeting against compulsory vaccination with the words: "I want you first of all to agree that vaccination does protect against smallpox."

We public vaccinators did not receive much encouragement from the Local Government Board. If we revaccinated a person within ten years of the last revaccination we could charge no fee for it. We were instructed to obtain four vesicles in infant vaccination. I refused to do more than three and put forward the suggestion that infant vaccination should be done in two stages—the first the "minimum-of-trauma" method, to be followed a year later by a more "vigorous" vaccination. The suggestion was turned down, partly, I suspect, because of the double fee.

I endorse Dr. Killick Millard's recommendation "little and often": recent vaccination protects not only against smallpox but against a sore arm. To the question that was frequently asked, "Is it necessary for me to be vaccinated again now?" my answer was, "I can only answer that question by vaccinating you."—I am, etc.,

Leavesden. H. ANGELL LANE.

Legal and Medical "Insanity"

SIR,—The letters and article are of importance in trying to assess correctly where one condition passes into the other, and the correct treatment in each case. The diagnosis of "psychopathic personality" is now so frequently, lightly, and dangerously made by young psychiatrists that it could easily be applied in some way or other to a large proportion of the nation, including not a few psychiatrists. Once thus labelled, a psychiatric patient is at the mercy of any malicious or ignorant person who may wish to exploit the patient or any particular situation to his own advantage. Thus the patient's condition gets worse and will continue to get worse under the present system, where cause and effect are so often confused.

A nervous breakdown may be due to intrinsic or extrinsic causes. In the cases which are due to extrinsic causes, we must be very careful to distinguish between those extrinsic causes to which the patient is unfortunately exposed through no fault of

his own, and those which are deliberately brought in to play against him by interested parties. The importance and numbers of this particular type of case are not sufficiently appreciated. In this type the people who are the causal factors in the events which specifically cause the breakdown of some unfortunate person are far more dangerous than any so-called "psychopathic personality," and treatment or other measures should be directed towards them rather than towards the patient. Undoubtedly, psychiatrists accomplish a tremendous amount of good in their psycho-analysis of the nervous breakdown due to ordinary extrinsic causes; but, in the type of case I wish to emphasize, the best thing that the patient can do is to keep as far away as possible from a psychiatrist and disentangle himself from a procession of psychiatrical platitudes, otherwise he will never get better.

Most doctors, whether they be specialists or general practitioners, know when they have made a mistake. But what check at all, except in particular cases, is there on the mistakes of young psychiatrists, and are they even conscious of the mistakes they make? That is why sometimes a man may get a truer verdict, and in the final analysis better treatment for himself, by the consensus of opinion of twelve impartial members of a jury, who have all the material facts before them, including the medical evidence. The case of Heath as quoted in your correspondents' letters is obviously a very far-fetched one, but to the mind of the ordinary person the verdict cannot but have been received as logically just.—I am, etc.,

London, N.W.11. A. LIONEL ROWSON.

Recruits for Medical Missionary Work

SIR,—We wish to ask publicity for the presentation of an appeal to young doctors, men and women, to consider medical missionary work as a career. We feel convinced that a large proportion of those now entering the medical professions are not aware of the vast opportunities offered by the work sponsored by the Christian Churches over-seas. The thrill of adventure has perhaps worn a little thin in medicine as practised in this country, but such is not the case in a mission hospital in Africa, China, or India. There the medical man of resource and initiative will find an opportunity for his every latent ability. The call of untouched suffering is still as strident as when it stimulated his predecessor 75 years ago; the wealth of clinical material is still as exuberant. But the medical missionary to-day is not called upon to work in a dark lean-to against the mission bungalow, with no trained assistants and tragically restricted equipment; he is not forced to leave half his cases undiagnosed for want of a microscope, nor to lament the inevitable sepsis following each surgical procedure.

The medical missionary of to-day has a wide choice of types of practice into which he may put his life. There is much pioneer work to be done in the front line of the attack on disease, where a high degree of initiative and much improvisation will be demanded in the rough-and-tumble of professional activity. On the other hand, he may be asked to work in an institution which structurally can compare with hospitals at home; he will be assisted by nurses trained as carefully, and with hands as skilful, as those staffing English hospitals; to operate in a theatre where aseptic ritual is understood and practised, with available those drugs and most of the equipment which would be found in, say, one of the smaller provincial hospitals in his own country. Moreover he will almost certainly be asked to co-operate in the teaching of nationals—either nurses, technicians, or, in certain picked institutions, internes; he will find his work naturally integrating with local Government schemes.

To the medical worker who has the vision to show through his profession his evangelical faith, who would speak to men and women, through the medium of the healing art, his Master's words of Eternal Life, there is open to-day a door of unbelievable opportunity. Writing on behalf of the Medical Advisory Board of the Conference of British Missionary Societies, we would be delighted to supply further information to any doctors wishing to consider this realm of work.—We are, etc.,

C. C. CHESTERMAN, M.D., M.R.C.P., Chairman.
H. G. ANDERSON, M.D., M.R.C.P.
RALPH BOLTON, M.R.C.S., D.O.M.S.

Edinburgh House, 2 Eaton Gate, London, S.W.1.

Medical Experiences in Japanese Captivity

SIR,—One effect of the authoritative and restrained contribution of Lieut.-Col. E. E. Dunlop (Oct. 5, p. 481) will almost undoubtedly be the production of still more and more hate for a nation whose people could sink to such atrocities. It is because I fear for a world where hate seems to be flourishing so luxuriously that I am driven to mention a relatively small experience. I too was a medical officer in a Japanese internment camp, where 615 British civilians were imprisoned from March, 1942, until August, 1945. We suffered no brutality; we were forced to no labour except that of feeding and running the camp. The Japanese authorities supplied the camp hospital with a not inconsiderable portion of its equipment, and facilitated our acquisition of that major portion which came from the Shanghai British Residents' Association, the International Red Cross, and the American Red Cross. The Japanese personnel frequently "requested" drugs and treatment, and even if this was often unreasonable, the news that the commandant had "requested enough sleeping pills for three nights" was NEWS of the best order to the camp, as his insomnia was invariably and correctly regarded as being due to the reception of bad news from Tokyo.

The normal reaction to such a document as that of Lieut.-Col. Dunlop is one of horror, followed by a mental indictment of the whole nation. Nothing is to be gained from refusing to see and admit the large areas of depravity represented by the records of Japanese treatment of prisoners. Yet even if the less sordid pictures are presented in the press less frequently, it is surely as well that they too should be recorded, still good to "think on these things" rather than occupy memory exclusively with horror.—I am, etc.,

London, N.W.1. RALPH BOLTON.

Universities and Colleges

UNIVERSITY OF CAMBRIDGE

At a Congregation held on Oct. 19 the following medical degrees were conferred:

M.D.—E. Hinden, W. B. D. Maile, H. L. Ellis.
M.B., B.CHIR.—E. L. McDonald, M. G. Cox, *M. Q. Birbeck, *E. A. D. Boyd, *R. Finlayson, *B. O. Reed, *P. F. C. Jackson, *J. H. Jacobs, *I. M. Ramsden
M.B.—*J. L. Morgan.

* By proxy.

The Vice-Chancellor announces that Eli Lilly and Company have undertaken to provide $3,500 for a period of one year for research on the relation of radiation to chemotherapy. The research will be carried on in the Department of Radiotherapeutics under the direction of Dr. E. Friedmann.

UNIVERSITY OF LONDON

Regulations for the Postgraduate Diploma in Psychological Medicine, revised in September of this year, are obtainable from the Director of the Department of Extra-Mural Studies, University of London, Imperial Institute Road, South Kensington, S.W.7. The examination is held twice a year: Part A in March and October; Part B in April and November. It is open to any candidate whose name is in the *Medical Register*, or who is registrable therein, provided that before being admitted to Part B the candidate produces evidence that he has had the clinical experience and made the attendances specified in the Regulations.

The following candidates have been approved at the examinations indicated:

ACADEMIC POSTGRADUATE DIPLOMA IN CLINICAL PATHOLOGY.—G. C. T. Burns, V. V. Gharpure, J. Gluckman, S. W. A. Kuper, R. Polakow, R. Sepson.
EXTERNAL DIPLOMA IN CLINICAL PATHOLOGY.—E. M. Barker, W. G. Davis, J. B. Enticknap, P. N. Meenan, W. P. Stamm.

St. George's Hospital Medical School

Clinical demonstrations in neurology and psychiatry will be given in the Medical School on Thursdays, at 4.30 p.m., by Dr. Anthony Feiling and Dr. Desmond Curran, and are open without fee to all practitioners and senior students of medicine. The first lecture of the renewed series will be given by Dr. Feiling on Dec. 5.

Arrangements made by the Ministry of Supply will ensure that at present any oil-wax suspension of penicillin produced will conform with the formulae of the *British Pharmacopoeia*, or with some other formulae previously approved by the Ministry of Health. These other formulae will include preparations using ethyl oleate.

Obituary

T. WARDROP GRIFFITH, C.M.G., LL.D., M.D., D.Sc., F.R.C.P.

We regret to announce that Dr. T. Wardrop Griffith, emeritus professor of medicine in the University of Leeds, died at his home in Stainbeck Lane on Oct. 21. He had been for many years a leading figure in the medical world of Leeds and the West Riding of Yorkshire.

Thomas Wardrop Griffith, eighth son and last surviving child of Charles Fox Griffith, J.P., of Aberdeen, was born in that city in 1861; he was educated at Aberdeen Grammar School and University, graduating M.B., C.M. with highest honours in 1882, and then held a demonstratorship of anatomy. He came south a year later to take up the post of resident medical officer at the General Infirmary at Leeds, which he held for four years, and was then appointed part-time professor of anatomy at the early age of 26. Next year he took his M.D. degree at Aberdeen with highest honours. Wardrop Griffith identified himself with the interests and development of the Leeds Medical School, and it was largely due to his efforts that the present fine building replaced the humbler one in Park Street. He held the chair of anatomy until 1910, when he became professor of medicine, having been full physician at the General Infirmary since 1905. As a clinical teacher he showed the lucidity and mastery of style that had distinguished him in anatomical science. He founded the dermatological clinic, and later placed the study of heart disease in Leeds on a truly scientific basis. During the war of 1914–18 he served with the 2nd Northern General Hospital at Beckett Park and was put in charge of the cardiac centre in the Northern Command. For his war service he was created C.M.G. He became emeritus professor in 1925. Aberdeen University conferred on him the honorary degree of LL.D., and Leeds the honorary D.Sc. He had been a Fellow of the Royal College of Physicians of London since 1908 and represented Leeds University on the General Medical Council for nine years. After retiring from the headship of the Department of Medicine he continued to serve as honorary consultant for cardiac affections to the Ministry of Pensions in Yorkshire. He wrote numerous articles on diseases of the heart and circulatory system, and acted for a long time as local correspondent of this *Journal*.

Throughout his career Wardrop Griffith was distinguished by the highest personal integrity and loyalty to the ideals of our profession and by devotion to the School which his scientific attainments did so much to adorn. He was a past-president of the Leeds and West Riding Medico-Chirurgical Society and a member of the B.M.A. for 63 years. A memorial service was held in the chapel of the General Infirmary on Oct. 24.

The death on Oct. 14 at the age of only thirty of IAN M. DAVIDSON of Carlisle has caused a gap that might have been left by many an older man, for Davidson packed so much into his short life. From Rugby he entered Glasgow University and graduated in 1938. After a period as house-surgeon in the Glasgow Victoria Infirmary, he went as ship's surgeon to the Far East. At the outbreak of war he volunteered for service in the R.A.M.C., but was shortly discharged on medical grounds. He came to the Cumberland Infirmary, Carlisle, in 1940, first as house-physician and then as house-surgeon; spent a few months away from that institution in 1941, during which he wrote his M.D. thesis, and returned later that year as surgical registrar. During his tenure of that office he obtained the Fellowship of the Royal College of Surgeons of Edinburgh. In 1943 he was appointed honorary assistant surgeon to the Cumberland Infirmary, and subsequently surgeon to the E.M.S., consulting surgeon to the Victoria Cottage Hospital, Maryport, and surgeon to the City General Hospital, Carlisle. He was also an examiner in surgery for the General Nursing Council. Ian Davidson was blessed with unusual gifts of mind and body, and his engaging charm and genuineness won him many friends. He was a sound surgeon, with a deftness of hand that reflected a quick and steady brain, and the maturity of his judgment belied his youth. His young widow, Dr. Josephine Cartwright, D.R.C.O.G., of Edinburgh, and their year-old daughter, survive him, and it is hoped that they and his parents (Mr. Norman Davidson, O.B.E., F.R.C.S., and Mrs. Davidson, of Glasgow) may be fortified by the good will of so many others who share their sorrow and their loss.—T. McL. G.

Dr. SIDNEY JOHN STEWARD died on Oct. 15, after about two years of ill health, at Babbacombe, Torquay, whither he had retired after about thirty years' work at Guildford, Surrey. He was the son of John Alfred Steward, twice Mayor of Worcester, where he was born in 1879. He was educated at the King's School, Worcester, and at Downing College, Cambridge, holding scholarships at both those foundations; at Downing he was captain of the Boat Club. Proceeding to St. Thomas's Hospital, London, for his clinical studies, he qualified as M.R.C.S., L.R.C.P. in 1904 and took the Cambridge M.B. in the same year; in 1909 he graduated as M.D., and later took the D.P.H. As an undergraduate he volunteered for active service in the South African war with the 1st Battalion Suffolk Regiment, to which the Cambridge University Rifle Corps sent a contingent. After qualification he was house-surgeon at the Brighton and Hove Hospital and then served a term as ship's surgeon in the Union Castle line, after which he took an appointment in the Colonial service as Government M.O. at Trinidad. Then he was assistant medical officer to the Devon Mental Hospital, after which he became medical adviser in mental deficiency to the Surrey County Council and mental specialist to their Education Committee; from these posts he retired in 1944 after about thirty years' service. He held a temporary commission in the R.A.M.C. throughout the 1914–18 war, mostly with the 1st Division, and was awarded the D.S.O. for gallant behaviour in action during the retreat from Mons; he retired with the honorary rank of major. He married Miss Edith Emma Murillo in 1910—she predeceased him early this year; their only son died in infancy, one daughter survives them. He was a member of the British Medical Association up to 1944, but held no office.

The death of Dr. CHARLES JAMES ROYSTON, who practised in the Moordown and Winton wards of Bournemouth, has grieved countless numbers of patients and friends. Only a few days before he was carrying on his busy day's work as cheerily as ever. Dr. S. Watson Smith writes: Forty-six years of age, Royston had crowded into his useful life an enormous amount of work. He was dominated by a high sense of duty; as a general practitioner he gave entire devotion to serving the community, wielding an immense influence for good wherever he went. His cheerfulness, his humour, his gentle friendliness, and his sympathetic nature were an inspiration to all who knew him. With an evenness of temper that nothing seemed to disturb, and a fine common sense, he addressed himself to each day's work with zest and zeal, making use of every minute; and his working day lasted sixteen or eighteen hours, sometimes even longer. Royston was trained at Aberdeen under the late Sir Ashley Macintosh, a great clinician whose memory he cherished; there he had acquired his grasp of fundamentals and of first principles which guided him surely and successfully in his bedside work. The means he employed were wisely simple; though up-to-date in his knowledge of drugs, he fully appreciated the value of the old well-tried remedies, which he made use of every day. Gentleness towards the suffering marked all Royston did. His life was packed with good deeds, and is to be measured by these rather than by the length of years given him; no life was more worthily spent. Alas, Royston worked himself to death. He was little interested in himself, always thinking last of his own comfort and interests. He worked harder than most in the hardest-worked profession, and seemed never to tire or become jaded. Royston was driven to exhaustion by an over-large general practice that demanded all his time and attention day after day without intermission; rest and enough leisure-time he never got, but he did not complain. Any who relied upon him in sickness, and numberless others who knew him, will, now that he is gone, have only one thing left—a grateful heart. His name and fame will long be remembered in North Bournemouth and far beyond.

News has been received of the death of Mr. GEORGE VERNON LOCKETT, of Kingston, Jamaica. He studied medicine at the University of Edinburgh, graduating M.B., C.M. in 1890, and obtained the F.R.C.S.Eng. in 1895. He had been senior resident medical officer in the Public Hospital at Kingston and was elected honorary consulting surgeon to that institution in 1915. He joined the B.M.A. in 1891, represented the Jamaica Branch at the Centenary Meeting in London in 1932, and was elected president of his Branch in the same year, afterwards serving on the Branch Council. He received the distinction of Fellowship of the American College of Surgeons in 1914.

Medical Notes in Parliament

HEALTH SERVICE BILL

Committee Stage Completed

When the Committee Stage of the National Health Service Bill was resumed in the House of Lords on Oct. 22 Lord AMMON intimated that it had been agreed to complete this stage on the following day. The Report stage would be taken on Oct. 28.

On Clause 20, discussing the provision of services by the local health authority, Lord HENLEY moved that any counter-proposals made to the Minister by voluntary organizations, councils, boards, or other authorities should also simultaneously be transmitted to the local health authority.

For the Government Lord LISTOWEL said it was inconceivable that the Minister would modify the local health authority's scheme in the light of objections lodged by other authorities in the area without giving the county council or county borough council a fair chance of commenting on the views of its critics. Lord HENLEY withdrew his amendment, and the House agreed to Clause 20 as also to Clause 21 and Clause 22.

Lord MUNSTER moved an amendment to Clause 23 (Midwifery) which would enable the local health authorities to make arrangements with maternity and general hospitals as well as with voluntary organizations to secure that the provision of midwives for attendance on women in their homes was adequate.

Lord ADDISON said he would look into this in a friendly way before the Report stage. The teaching hospitals had arrangements for attending cases in their own homes, sometimes with students and sometimes without. It was likely that arrangements might have to be made with respect to the boards of governors of teaching hospitals. The amendment was withdrawn and the House agreed to Clause 23.

Clause 24 was approved after Lord MAUGHAM had moved and withdrawn a drafting amendment on the duties of health visitors. Lord LLEWELLIN, during the discussion of this amendment, said the view was widely held that the words of the Clause as they stood might be held to justify a presumption that persons who were not duly qualified medical practitioners should be appointed to look after those suffering from illness. In answer to this Lord JOWITT gave an assurance that there was no intention that health visitors should come between the doctor and the patient. Health visitors had no right to force their way into a house. The Committee then agreed to Clause 24 and to Clause 25 (Home Nursing).

On Clause 26 Lord LISTOWEL moved an amendment to ensure Ministerial approval for the exercise by the local health authority of power to arrange for vaccination or immunization against diseases other than smallpox and diphtheria. The Committee agreed to the amendment and to the Clause as amended. Clause 27 (Ambulance Services) was accepted without amendment.

Lord AMULREE on Clause 28, relating to the prevention of illness, and care and after-care, moved to insert the care of the aged among the purposes for which the local health authorities could make arrangements. He said if Parliament attempted to separate old people who were sick from old people who were healthy, they would get into great difficulty. In the next five or six years the number of persons over 65 in this country would increase to about 8,000,000, and of these many would need to be taken care of in some sort of home. There was a danger that the hideous Poor Law infirmary might reappear.

Lord LISTOWEL said the amendment went far beyond the limits of a Bill which dealt with public health. Care of the aged who were not sick would be dealt with in forthcoming legislation for the abolition of the Poor Law. On this assurance Lord AMULREE withdrew his amendment.

Lord MUNSTER moved to amend the list of persons for whom the local health authority could provide by leaving out "persons suffering from illness or mental defectiveness or the after-care of such persons" and inserting "of mental defectives or the after-care of persons who have suffered from illness." He said that under the Clause as it stood the local authority might and if directed by the Minister must make arrangements for the care of persons suffering from illness. It would be possible for that obligation to be fulfilled by the introduction of a whole-time salaried medical service side by side with the general practitioner service.

Lord LISTOWEL said it was not the intention of the Government to introduce a full-time salaried medical service, and the Clause as it stood could not give effect to such a purpose. Lord MAUGHAM said that again and again in this Bill very wide clauses put into the hands of the Government or local health authorities powers which they were not intended to have.

Answering Lord LLEWELLIN, Lord LISTOWEL said the expression "after-care" in this Clause meant care involved after hospital treatment, not care after a patient was finally cured. A number of things were essential to speed up recovery and prevent the spread of infection. An instance was the provision of bedding for a patient suffering from tuberculosis who was waiting for a place in a sanatorium. This would be provided by a local authority and not by the doctor. Lord ADDISON instanced the provision of hot-water bottles. The words which had been challenged were intended to secure that services of that kind were made the duty of the general health scheme. Lord MUNSTER withdrew his amendment and the House agreed to Clause 28 as amended. It also approved without discussion Clause 29 and Clause 30.

Executive Councils

On Clause 31 Lord LUKE moved to provide that in constituting a council the proportion of the whole number of members of the council to be appointed by bodies representing medical practitioners, dental practitioners, and persons providing pharmaceutical services should not be less than the corresponding proportion under paragraph 1 of the Fifth Schedule.

Lord JOWITT said there were liable to be exceptional cases where, owing to the smallness of an area or the sparseness of its population, it was difficult to get an effective council of twenty-four. The effect of the amendment would be that the Minister would always have to deal in multiples of twenty-four. In a council of 16 it would be impossible to have one and a quarter chemists, the proportion provided by the Fifth Schedule. Lord LUKE withdrew his amendment.

Lord ADDINGTON moved and withdrew an amendment designed to ensure that every executive council and joint committee should submit to the Minister a scheme for the exercise of its functions under Part 4 of the Act and that a copy of this scheme should be sent to every local authority in the area with power to the authority to make representations upon it to the Minister. The House then agreed to Clause 31 and also to Clause 32.

Medical Certificates

On Clause 33 Lord HENLEY moved to provide that regulations might be made for the purposes of complying with any requirements arising out of a contract of employment. He said the Clause provided that the executive council should make arrangements with medical practitioners for personal and medical services for potential patients in their area and should make regulations as to what these personal medical services were to be. A subsection of the Clause related to the issue to patients of certificates "reasonably required by them under or for the purposes of any enactment." He explained that the amendment was based on the assumption that these medical certificates would be issued to patients free of charge. The object of the amendment was to extend the issue of free certificates to patients covered by the provision of conditions of service in their employment entitling them to continue on full wages for the periods during which they were incapacitated.

Lord JOWITT said doctors' obligations in national health insurance work were limited to giving certificates required in that connexion. The Bill widened the doctor's obligations to the provision of certificates reasonably required under any enactment, which would include regulations. A certificate would be obtainable free of charge, for instance, for an expectant mother to obtain priority food. The amendment required the doctor to give a certificate for a private purpose which had nothing to do with any Act, any insurance scheme, or any regulations. Where they were not dealing with public enactments he did not see why the doctor should not be allowed a reasonable and proper charge. Under the Insurance Act which was to replace the workman's compensation scheme the case would be covered where a county court judge asked for a doctor's certificate. Lord HENLEY withdrew his amendment.

Terms and Conditions for Practitioners

On the same Clause 33, Lord LLEWELLIN moved to add the following subsection:

"Regulations prescribing the terms and conditions upon and subject to which any service would or could be required to be rendered by any medical practitioners under or in pursuance of the provisions of this Act shall be made not less than 3 months before the day which is the appointed day for the purposes of subsection (1) of section 34 of this Act."

Lord Llewellin said this was an important amendment. Clause 34 (1) provided that every medical practitioner other than a paid assistant who wished to provide general medical

services should be entitled on making an application at any time before the appointed day in the prescribed manner to be included in the lists of medical practitioners. It was reasonable that these men should have an adequate opportunity of being told what the conditions were going to be when they came in. There was a strong desire in the medical profession to know these terms a reasonable time in advance so that they would be able to decide whether or not they should come into this service.

The LORD CHANCELLOR (Lord Jowitt) said that the words of the amendment were defective. It would extend to hospital services, whereas the House was dealing with medical services. That point could be put right. He sympathized with the substance of the amendment. It was only right that the medical profession should know the terms and conditions for a longer period even than three months, but he did not wish to tie himself down in the Bill. After all, the terms would be negotiated with representatives of the medical profession, who would keep their constituents acquainted with the matter as it proceeded. He would do his best to see if he could get the negotiations through to provide more time than three months. In reply to Lord CRANBORNE, who appealed to the Government to accept this amendment, the LORD CHANCELLOR said he had heard April 1, 1948, suggested for the appointed day. There would be very difficult negotiations, but he thought the Government could give at least six months' notice. It ought to aim at this as a minimum.

Method of Payment

Lord LLEWELLIN withdrew his amendment. He then proposed another subsection to run:

"The remuneration to medical practitioners undertaking to provide general medical services in pursuance of the provisions of this Act shall be fixed by the capitation method except in any cases where the Minister on the recommendation of the Medical Practices Committee considers that exceptional circumstances necessitate remuneration on a different basis."

He said the amendment went to the root of whether the doctor should be paid by salary, as some members of the Labour Party had wanted, or by a capitation fee or by a mixture of salary and capitation fee. No indication had been given in the House of Commons of what proportion was to be by salary and what proportion by capitation fee. The Conservative peers believed that the right way was to pay by capitation fee but realized there were areas where the capitation fee did not meet the case. Where the Medical Practices Committee recommended to the Minister that it was necessary to attach a salary in order to increase the number of medical officers in an area, the Minister could under the amendment approve, and the salary would automatically come in. But where the service could be worked without the new departure of trying to make a State salaried medical service, then the independence of the doctor should be kept as in the past. With a salaried service the doctor became more the servant of the State than a servant of the patient.

Lord MORAN said this question roused the misgivings of many doctors who like himself were satisfied, generally speaking, with the hospital provisions but had misgivings about what would happen to the general practitioner. His friends always asked two questions. The first was whether, when the Bill became law, the medical profession would be able to attract the exceptional man in competition with the other professions. The second was whether, when the Bill became law, the medical profession could provide conditions so that a man entering medicine could be as good and as efficient as any in the past and would remain keen. The proposal to pay a basic salary required more justification than had been given. It was said that any practitioner entering medicine might have financial difficulties in his first year or two and that a basic salary of £300 or £400 per annum would give some security. Would the basic salary really act in that way? Was it proposed that the Ministry of Health should go on paying doctors basic salary if they did not get any patients in their first year or two? If that was not the intention of the Ministry then it was clear that if the doctor secured patients to an amount equivalent to the basic salary this measure of security was no longer necessary. There was a good deal to be said for the alternative of a capitation fee. In past years he had been asked to advise the Services how they could get keen men and keep them keen. His investigation showed that it was impossible, with brilliant exceptions, to keep the men as keen in whole-time salaried service as in general practice where the competitive stimulant was present all the time. It was sometimes said there was something derogatory in competing for patients; he was sure the Lord Chancellor would not subscribe to that.

Lord HORDER said it had been reported during the previous two days that the Minister of Health was on better terms with the British Medical Association than he had formerly been. He thought Mr. Bevan got some satisfaction out of this. If it were true he could do nothing more likely to take these good relations a stage further than by accepting this amendment. Statements that there was no intention in this Bill to nationalize the medical profession could be made *ad nauseam*, but there would remain fixed in the minds of members of that profession the idea that that was the final intention of the Government and of the Ministry of Health. There was an equally strong feeling against this method of paying the doctor in part by a basic salary and in part by a capitation fee which decreased with the number of patients whom the doctor treated. A ceiling was fixed above which no doctor could rise by energy, by genius, or by any other quality which Parliament wished to encourage in members of the profession. Doctors had it fixed in their minds that this was the most vital spot at which the Government could attack the independence of the doctor. It had been stated by Mr. Herbert Morrison that this was the first step toward a complete policy. What was that complete policy if it was not to make all doctors whole-time salaried servants of the State? It had been said in the Commons that the time was not yet ripe for a full-time salaried service for every doctor. The remark implied that the Government intended to pluck the fruit when it was ripe. He suggested to Ministers that it would be wise to assure themselves of extra confidence in the minds of the medical profession by accepting the amendment. Mr. Bevan had said that without the doctors co-operation the scheme must fail, but the doctors wanted it to succeed and believed there were good points in the Bill. He thought the Bill a bad one but would like to make it less bad and had committed himself to the belief that the doctors would do their utmost to make it work. Doctors could not strike. They must continue their work and they must have State support in continuing their work. It was for the State to help the doctor and not so much for the doctor to help the State. One other word. The doctor was not an altruist when he started in his profession. He was an altruist in proportion to his professional success. The Government must not expect from the young practitioner entering upon a career, which was notoriously expensive both for his parents and for himself, that grade of altruism which it got from those members of the profession who had "arrived" and were therefore able to add to the counsels of the Government. Doctors agreed that it was the duty of the State to improve the machine, and that when the State had improved it the doctor must work it. An unwilling worker would not even give the scheme the trial which it deserved.

Lord ADDISON agreed that the amendment affected an element vital in the whole scheme of the Bill. He recalled that 34 years ago he had been involved in the same controversy when medical men up and down the country heard speeches telling them of the dreadful things that were to happen. They did not happen, and he himself had been one of those who said they would not happen. He disagreed now with Lord Moran as much as he had done with the critics at that time. He thought Lord Moran's faint praise would not stimulate the hearty assistance in working the scheme which he said he desired. Lord Addison said that he himself had been largely in charge of the negotiations relating to the original capitation fee. Frankly he had been exceedingly disappointed at the way in which it had worked. In contradiction to Lord Moran he emphatically thought there was something derogatory in competition for patients. The whole tradition and practice of the medical profession was to frown on unnecessary competition for patients. The profession was right in that matter. There had been a number of cases when men had enlarged their lists not because of their skill but by doing other things which attracted people to them. There were good reasons for the system proposed in the Bill. In the first place nobody wanted inflated lists. An inflated list meant that a man could not give the detailed personal attention to his patients which they ought to have. The Government had on that account adopted the system proposed in the Bill and not because it had sinister designs. A second reason for the system was that it would be necessary to try to attract young doctors to country districts where there were relatively few people. The right way to do that was to let these young men know that they would have something to live on. Further, there were areas inadequately served by medical men, and in those areas the attraction of a basic salary would be influential in helping the Government to get the service it desired. The method of payment could not be prescribed in the Act, it must be left to negotiation. It was not even prescribed in the original Health Insurance Act. Nobody envied Mr. Bevan in the negotiations he would have to conduct on this matter in the next year or two. The precise procedure would have to be negotiated and so would the relation between the basic salary and the capitation fee. Lord Addison did not think it would be possible to devise a system whereby these could be standardized. In remote districts the

basic salary would probably have to be higher than in other places. There would still be an element of competition, which, so far as it was wholesome and proper, none of them would wish to damage. The Government could not accept the amendment.

Lord CRANBORNE said the Government had been wise not to put up the Lord Chancellor to speak on this amendment, for he would have been embarrassed in dealing with the argument that competition was of value in a profession. The House contained many of the greatest authorities on all questions and listened to their advice. Speaking for himself he had come to the conclusion, taking into account the experience of Lord Horder and Lord Moran and their knowledge of the individual members of their profession, that the case they had made out was unanswerable. For that reason the Opposition felt obliged to take the matter to a division.

Lord READING said that in his own profession he had seen too many young men obliged to abandon their career in the early stages because they had no means of going on with it. He knew of others who desired to enter the medical profession but had been similarly barred. Perhaps they had been able with Government grants to take the necessary qualifications but had been left with nothing to enable them to embark upon the profession afterwards. For these reasons his friends did not feel disposed to oppose the Government. He suggested that the Government should give an assurance that it was not in their mind, in the present condition of affairs, to embark upon a wider scheme of State medical service and State control of service. Lord ADDISON said he could and did give that assurance.

On a division the amendment moved by Lord Llewellin with regard to the remuneration of medical practitioners was carried by 53 to 37.

Certificates: Partnerships

Lord MAUGHAM moved to insert a subsection to provide that nothing in the Act should be deemed to debar and no regulation should be made to debar any medical practitioner from giving or issuing any certificates under this or any other Act in relation to or for the purpose of any of the service provided under this Act on the grounds that such medical practitioner was not included in any particular list of medical practitioners undertaking to provide general medical services. He said the amendment was brought forward to relieve the anxiety of doctors who did not at present intend to go on the list and feared that regulations made under the Clause might preclude an independent doctor from giving certificates which were necessary under Acts of Parliament. The LORD CHANCELLOR said that under the Bill there was no distinction between the independent doctor and the doctor who was operating under the public service. That assurance had been carefully checked. Lord MAUGHAM withdrew his amendment and Clause 33 as previously amended was agreed to.

On Clause 34 (distribution of medical practitioners providing services) the House accepted an amendment proposed by Lord LISTOWEL to ensure that an appeal by a doctor against a decision of the Medical Practices Committee must be decided, as well as heard, before the successful applicant was allowed to take up a new practice. Lord MUNSTER then moved to add two new subsections in the same Clause. The first provided that the Medical Practices Committee and any Executive Council, as also the Minister, in determining appeals, should have regard to a desire expressed by the members of a family to work together and to a desire expressed by a medical practitioner to succeed to the practice of his father or other near relative. The second draft subsection proposed that in considering candidates for a vacancy among medical practitioners practising together as a partnership the Medical Practices Committee and any Executive Council should consult the remaining members of the group before selecting the candidate to fill the vacancy. Lord MAUGHAM supported the amendment and said that unless it was clear that a son had a fair chance of succeeding to his father's practice practitioners with children who they hoped would become doctors would be disposed not to come on the list.

Lord LISTOWEL said that the existence of family or group relationships would be a material factor which the Executive Council could not fail to take into account in advising the Medical Practices Committee about an application to practise, and it would also be considered by the Minister in the event of an appeal. The competence of the doctor himself would be an important consideration, but it was obvious that other things being equal preference would be given to an applicant having ties of this kind. He offered to consult Mr. Bevan about the amendment and see if it was possible to devise a form of words which could be put in the Bill. Lord MUNSTER withdrew his amendment and Clause 34 as amended was agreed to.

Sale of Goodwill

On Clause 35 (prohibition of sale of medical practices) Lord MAUGHAM moved to amend in subsection 2 the words "any person who sells or buys the goodwill or any part of the goodwill of a medical practice which it is unlawful to sell by virtue of the last foregoing subsection shall be guiluty . . ." by inserting the word "knowingly" after "who." He said this amendment was necessary to carry out the intention of the Clause as it stood. Under subsections (3), (4), (5), and (6) certain transactions were deemed to be a sale of the goodwill for the purposes of subsection (1) of the Clause. The consequence was that there might be people who committed what was made a crime by subsection (1) without knowledge of the circumstances in which that crime had resulted. There might be a sale under which a medical practitioner who was retiring sold his furniture or medical equipment, some of which was now very expensive, to a new practitioner who was coming in. The vendor could not know whether he would be able to establish or whether the purchaser would be able to establish that no part of the consideration was given for goodwill or part thereof. Similarly a tribunal might at some subsequent date say that the consideration for the sale, letting, or other disposition of premises for the purposes of a practice to another medical practitioner was substantially in excess of what might reasonably have been expected if the premises had previously been used for purposes of medical practice. Then both parties were held to have committed a crime. Lord Maugham said his opinion was that the provisions of Clause 34, except so far as they related to the sale of goodwill by medical practitioners who were on the list on the appointed day, were ill-considered and went much too far. He had very strong grounds for asking the Government to insert the word "knowingly."

The LORD CHANCELLOR noted that no one was attacking the general principle of the prohibition against the sale of medical practices. The House would agree that if a man was getting full compensation from public funds under Clause 36 it was undesirable that he should also get compensation or payment for the sale of his practice from private sources. In subsection (2) the word "knowingly" was unnecessary because it was obvious a man would never sell or buy the goodwill of a medical practice unless he knew what he was doing. That sort of thing was not done when suffering from some mental aberration, or at least not often. In subsection (3) the Bill was dealing not with a direct and obvious sale of goodwill but with premises. There the Government had put in the word "knowingly," and in some of the later clauses it had again put in words enabling the defendant to answer a charge by saying that remuneration was not fixed by reference, for instance, to the taking of a new partner. His observation about compensation applied to existing people. Every form of evasion had to be stopped if possible and the clauses had to be stringent. There were two safeguards. Anybody in doubt who did not want to run his neck into a noose could go before the Medical Practices Committee. If he revealed the facts and they said "that is all right" then their certificate was complete protection. In the second place the Bill said the prosecutions could only be brought by the Director of Public Prosecutions and the Director could get a report from the Medical Practices Committee. He believed there was adequate protection to prevent an innocent person from getting into trouble about this thing.

The amendment proposed by Lord Maugham was negatived. The House accepted an amendment moved by the Lord Chancellor to correct a clerical error and make it clear that a fine could only be levied after conviction.

In the same Clause, subsection (3) commencing "where any medical practitioner or the personal representative of any medical practitioner knowingly sells or lets premises previously used by that practitioner for the purposes of his practice," Lord MAUGHAM moved to leave out "or the personal representative of any medical practitioner." He said in an ordinary goodwill the name was a great element, but in the case of a doctor goodwill had nothing to do with the name because the incoming practitioner had to carry on the business under his own name. He got very little advantage from the premises *per se*. Goodwill meant nothing more than that the man who was selling was required to give some assistance which might be great or small to the man who was purchasing. In the ordinary way the practitioner who was selling went round with the new practitioner and introduced him to the patients. If he was a celebrated surgeon there was no goodwill at all. The eminent medical practitioners who sat in the House of Lords had absolutely no goodwill they could sell because their business was connected with their own skill or genius. But the ordinary country doctor who agreed to help with an introduction might give some sort of benefit. Of course an Act of Parliament could say that a widow who sold the premises in

which she had lived with her husband for 20 years was liable to be treated as if she had committed a crime if somebody thought she had got substantially too much for them.

The LORD CHANCELLOR said that where a widow received compensation out of public funds in respect of a practice she should not get compensation for the same practice out of private funds. Lord Maugham was wrong in arguing that because a doctor had died there was no sale of goodwill. The fact that a place had been used as a doctor's surgery and consulting room for a long time, that patients had been accustomed to come there, and that it was fitted up might enable a higher price to be secured for those premises if sold to a doctor. One of the most important features in a sale of goodwill was the transfer of the case books. That constituted a very valuable element. It had to be proved against the widow to convict her that she was selling at a price substantially in advance of the price she would have received had she been selling to a person who was not a doctor. He could not see why Parliament should not prevent her doing that, and he maintained that the words "or the personal representative of any medical practitioner" ought to remain.

Lord MAUGHAM repeated that he was dealing with the case of the personal representative of a medical practitioner who had died after the appointed day. He had never heard anyone suggest that the handing over of a case book was a sale of goodwill. He asked the Lord Chancellor to reconsider what had been said.

The LORD CHANCELLOR said he would go into the matter again with his legal advisers, and Lord Maugham withdrew his amendment.

Clause 35 as amended was agreed to, as were Clauses 36–39. Pharmaceutical services, general dental services, and supplementary ophthalmic services are covered in Clauses 38–41. An amendment moved by Lord TWEEDSMUIR to Clause 40 was withdrawn and the Clause was agreed to. On Clause 41 (supplementary ophthalmic services) Lord CECIL had down amendments designed to secure provision of treatment for the deaf as part of the hospital and specialist services, "putting ears on the same footing as eyes." He moved the first of these, and was supported by Lord HORDER, who said that defects of hearing had never been given the same prominence as defects of sight, partly because the study of the ear had not the same fascination as study of the eye. There was a great opportunity in the new medical services for research and study of the deaf person. He warned the House against confusing the aural medical practitioner and the maker of hearing aids. Lord LISTOWEL said the service which Lord Cecil desired for the deaf would be better carried out by Part II of the Bill, by the hospital and specialist services. He believed the deaf numbered about 400,000 against 4,000,000 who suffered from defective vision. Lord Cecil withdrew his amendment and Lord LISTOWEL moved a series of amendments to make clear in the Bill the distinction between ophthalmic opticians and dispensing opticians. The House agreed to the amendments and to Clause 41 as amended.

Disqualification of Doctors

On Clause 42 (disqualification of practitioners) Lord LISTOWEL moved drafting amendments which were accepted. Lord READING moved to leave out subsection (4) which runs:

"An appeal shall lie to the Minister from any direction of the Tribunal under the last foregoing section, and the Minister may confirm or revoke that direction."

He moved to substitute:

"(4) Any person aggrieved by a direction of the Tribunal either under the preceding subsection or under subsection (8) of this section may within one month after the date on which notice is given to him by the Tribunal of their direction appeal against the direction in manner provided by Rules of Court to the High Court, and in any such appeal the High Court may make such order or give such direction in the matter as it thinks fit."

The Tribunal itself, Lord Reading said, consisted of three persons, of whom one only was a person of legal experience. If it decided that the continued inclusion of an individual in a list would be prejudicial to the efficiency of the service it could either exclude him from a particular list on which his name appeared or it could exclude him from any list anywhere in the country of practitioners employed under the National Health Service Act. These were formidable powers to entrust to any tribunal where only one member had legal experience, because as the service grew and embraced a greater proportion of the medical practitioners exclusion from it was going to mean professional death to the person concerned. The next step under the Bill was that the person on whom this sentence of professional death had been imposed could appeal to the Minister who employed him for this purpose and came into this hearing to all intents as a party. The Minister could depute the hearing of the appeal to some person on his behalf. The House knew nothing about this person. He might be a Civil Servant who himself was subject to the Minister. In that event the Minister was master not only of the appellant to the Tribunal but also of the judge as well. That must be an intolerable position.

Lord SIMON asked the Lord Chancellor whether he thought that the argument of Lord Reading could reasonably and properly be withstood.

Lord MESTON said there were certain things that a doctor must not do, and if he did them he was liable to be found guilty of gross professional misconduct and in the normal event would appear before the General Medical Council. This Bill had nothing to do with the G.M.C., and the Government had stated in the House of Commons that gross professional misconduct did not come within the words "prejudicial to the efficiency of the services." The Bill, however, did not say so; it made no such limitation. A doctor might do many things which might not be professional misconduct. They might be on the borderline or might concern his medical duties as apart from his moral conduct. He might have a tendency to absorb too much alcohol. He might prescribe the wrong medicines or be negligent or lazy. All these things came within the words "prejudicial to the efficiency of the services." Was it really suggested that a man who had devoted his whole life to medicine should be professionally destroyed by the report of an inspector which was probably not read by the Minister?

The LORD CHANCELLOR said the House was fighting over a well-trampled battleground. The matter had been very closely considered, and it was one on which the Government was bound to stand. The Bill was a development of the old National Health Insurance Act, under which the removal of a doctor from a list was a matter for the Minister and for the Minister alone. Lord Jowett said he had been closely connected with that Act and had never heard a single complaint from any doctor about the way it worked. The Government did not want the doctors to become Civil Servants; but they were in some sense in public employment, and the analogy between employer and employed was obviously there. If the Minister were entrusted with the duty of securing a service which he considered to be efficient it was impossible to ask him to deprive himself of the right of dismissal.

Lord CRANBORNE said he did not know whether there was a demand for an appeal to the High Court from the doctors, but he had come across a demand for greater protection than was given under the Bill as it stood at present. On this point the doctors were extremely nervous. It was essential that in the early inquiries the doctors should be given the benefit of counsel and of calling evidence. He asked the Government to consider before the Report Stage if something of that kind could be done. The LORD CHANCELLOR undertook to see if he could find a solution to that point.

Lord READING said he did not think that the matter had been advanced much further, and with reluctance he withdrew his amendment.

Miscellaneous Clauses

On Oct. 23 Clause 42 as already amended was agreed to. On Clause 43 (powers of Minister where services are inadequate) Lord ADDISON recognized the misgivings which the comprehensive words in the Clause promoted. He said the intention was that the Minister should be able to take action to deal with a particular shortage or emergency which had been discovered. He thought the Government should consider whether it could frame words which would meet the needs of the emergency instead of being of general application. Lord Llewellin withdrew an amendment, and the House agreed to Clause 43. It also accepted Clause 44 (recovery of charges in respect of certain appliances and dental treatment) after Lord Llewellin had withdrawn an amendment. Clauses 45–47 were agreed to without discussion.

On Clause 48 (provision of courses for medical and dental practitioners) Lord READING moved an amendment to authorize the provision of refresher courses for nurses employed in connexion with services provided under any part of the Act. Lord HORDER supported the amendment. He said there was totally inadequate reference to the work of nurses throughout the Bill. In the House of Commons Mr. Bevan had said the matter would adjust itself because the nurse could always go back into a hospital. That was a totally inadequate means of dealing with the postgraduate training of nurses. Lord ADDISON said that in this clause for the first time the State went out of its way to provide for medical men to have postgraduate training and to get refresher courses, but not one noble lord said "Thank you." This was amazing. There was no place in the world which had equal facilities to London for postgraduate training and the Government intended to do whatever it could to help the medical profession and the teaching colleges so to develop. Nurses were different from the practitioners dealt with in Part IV of the Bill. They were whole-time servants and not

paid as he hoped the doctors would be—partly by capitation fee. It was to help men who were not whole-time servants to get this training that the provision in the clause was inserted. Those who were whole-time servants, such as nurses and medical men employed whole-time, would be provided with facilities and would be expected to undergo regular refresher courses. Lord READING withdrew his amendment.

Clause 48 was agreed to, as were Clauses 49–52. Clause 53 (grants to local health authorities) was approved after discussion. Clause 54 was agreed to, and so, after discussion, was Clause 55. Clauses 56–59 were agreed to; also Clauses 60–65. On Clause 66 (superannuation of officers) Lord LISTOWEL for the Government moved in subsection (2) to leave out "so employed who leaves his employment" and to insert "who leaves employment in Scotland or Northern Ireland entitling him to participate in superannuation benefits (whether provided under the said Act or otherwise)." He said the amendment was to confirm the pension rights of health officers which would otherwise be prejudiced. Suitable entrance to the health services in England might come from the Scottish local government service. The amendment had been drafted to cover them. The amendment was agreed to, and Clause 66 as so amended was accepted. Clauses 67–71 were agreed to. After discussion the Committee agreed to Clauses 71, 72, and 73. On Clause 74 (regulations) Lord MUNSTER moved that no regulations should be made to determine the areas for which the regional hospital boards were to be constituted unless a draft had been laid before Parliament and had been approved by each House. The LORD CHANCELLOR said the regulations about the regions would be made separately, and Lord Munster withdrew his amendment. Clauses 75–77 were agreed to.

On Clause 78 (interpretation) the House accepted an amendment proposed by Lord LISTOWEL stating that a dispensing optician meant a person having the prescribed qualifications for the fitting and supply of optical appliances. It also accepted an amendment that ophthalmic optician meant a person having the prescribed qualifications in optics, including the measurement of errors of reflexion, in orthoptics, and in the fitting and supply of appliances. Lord MAUGHAM suggested that the word "specialist" should also be defined. It occurred constantly in the Bill, and in practice there would often be a necessity to know whether a man was specialist or not. There should be some definition making it reasonably clear that only if they did not undertake general practitioner work were they to be treated as specialists. Lord MORAN said what Lord Maugham suggested would not be practicable, because there were only half the specialist consultants who were needed for the purpose of the Bill, and during a long period—it might be ten years—a man might be both general practitioner and consultant. The General Medical Council had gone closely into a suggestion that there should be a register of medical consultants, but he did not think that was likely to be pressed. He considered it impracticable. Clause 78 as amended was agreed to and the remaining clauses agreed to.

Hospital Committees

The first schedule was agreed to, as was also the second schedule. In part two of the third schedule (regional hospital boards, hospital management committees, and boards of governors of teaching hospitals) Lord MUNSTER moved to change the provision that a hospital management committee shall include persons appointed after consultation with the senior medical and dental staffs. He desired to substitute consultation with a committee representing this staff. Lord MORAN said he thought the amendment really meant that the medical staff as a whole should be consulted. A medical staff was a democratic body and did not recognize any distinction between junior and senior members. The LORD CHANCELLOR agreed that where there was a medical committee the whole body ought to be consulted. The Minister intended to encourage the formation of these committees everywhere. Where there was no committee the Minister's intention was to consult with the consultants and specialists —not the housemen. He gave an undertaking that where there was a medical staff committee that would be consulted as an entity without picking out the older and distinguished members. Lord Munster withdrew his amendment. The Lord Chancellor accepted an amendment proposed by Lord LUKE to provide that before making appointments to fill vacancies the board should also consult the committee. Lord MORAN moved that on the board of governors of a teaching hospital not more than two-fifths of the members appointed by the Minister shall be nominated by the University with which the hospital is associated. The proposal of the Bill was for one-fifth to be so appointed. The LORD CHANCELLOR thought that the amendment would overweigh the teaching proportion. Another fifth were to be appointed by the medical and dental teaching staff. A teaching hospital had the threefold function of treatment of patients and of research and of teaching hospitals. For the future there must not be an undue emphasis on the teaching side.

Lord MORAN said it was admitted in the whole profession that the patient's interest must always be looked after. In the last 25 years he had seen a weaning of public opinion from the idea that a teaching hospital did not exist for the care of the sick but for the teaching of knowledge. The amendment was withdrawn, as was an amendment moved by Lord Moran to provide that not more than one-fifth of the personnel of the board of governors of a teaching hospital should be nominated by the medical staff committee of every hospital in the group. He recalled that in the provinces a teaching hospital often comprised two or three institutions. The LORD CHANCELLOR promised to see whether suitable words to deal with the point could be inserted on the report stage. He refused an amendment to provide that before making appointments to fill vacancies the Minister should consult the board.

The third schedule as amended was agreed to, as was the fourth schedule after rejection of amendments dealing with the constitution of health committees. The fifth, sixth, and seventh schedules were agreed to with a consequential amendment in the seventh. The eighth schedule was agreed to. On the ninth schedule (amendment and appeal of enactments relating to persons of unsound mind and mental defectives) Lord LISTOWEL moved an amendment to enable the medical superintendent of a resident hospital to allow to be sent out on trial a patient received there under contract. The amendment was accepted, as were other consequential amendments moved by Lord Listowel, and the schedule as amended was agreed to. Consequential amendments were made in the tenth schedule, one of which substituted the words "Minister of Health" for "Board of Control" in Section 92 of the Children and Young Persons Act, 1933. The tenth schedule was then agreed to, and the Committee Stage was concluded.

REPORT STAGE

The National Health Service Bill was considered on the Report stage in the House of Lords on Oct. 28.

On Clause 7 the LORD CHANCELLOR moved an amendment—which was agreed to—to ensure that any gifts made to voluntary hospitals between the date of the passing of the Act and the appointed day should be used according to the wish of the donor.

The LORD CHANCELLOR moved a further amendment to provide that every board of governors and hospital management committee should ensure, so far as was reasonably practicable, that the objects of an endowment and observance of any conditions attached to it, including in particular conditions intended to preserve the memory of any person or class of persons, were not prejudiced. He said that he felt very strongly that it would be wrong to interfere more than could be helped with the wishes of people who had given money to hospitals, although there must of course be a certain amount of latitude.

Lord MAUGHAM, who had tabled an amendment in the same sense, congratulated the Government on having found a means of meeting the general wish of the House. Lord LLEWELLIN thanked the Government for having met the Opposition in the amplest possible way. The amendment was agreed to.

Clinical and Research Facilities

An amendment to Clause 12, inserting in the Bill the duties of hospital management committees, was agreed to. The amendment consisted of the following new subsection:

"(2) It shall be the duty of the hospital management committee of any hospital or group of hospitals, subject to and in accordance with regulations and such directions as may be given by the Minister or the Regional Hospital Board, to control and manage that hospital or group of hospitals on behalf of the Board, and for that purpose to exercise on behalf of the Board such of the functions of the Board relating to that hospital or group of hospitals as may be prescribed."

The amendment also added the following new paragraph: "(*a*) to provide for the university with which the hospital is associated such facilities as appear to the Minister to be required for clinical teaching and research."

Lord ADDINGTON moved an amendment to Clause 19 to secure the delegation to non-county boroughs of a substantial part of the control of the day-to-day duties in connexion with their health services, if they applied for that authority. Lord O'HAGAN said he hoped it would also be possible to include urban district councils. Lord LLEWELLIN said that as an amendment had been accepted making mandatory the delegation of certain powers by the L.C.C. to London boroughs, he thought it right that the counties should be similarly treated.

The LORD CHANCELLOR said that his colleagues in the Coalition and in the present Government felt strongly that where there was a local authority service in any area there must be

one local authority and not several. The proposal that partition of the service should be permissive impinged on another vital principle. A decision must be taken that the thing should be done one way or the other, and not left to be a matter of bargaining or political agitation in the future. The amendment was withdrawn.

Terms of Service

On Clause 33 Lord LLEWELLIN moved that medical practitioners should be given at least three months' notice of the conditions of the medical service before having to decide whether they should enter it or not. The LORD CHANCELLOR said that he could not accept the amendment, but he gave an assurance that the period of notice to be aimed at should be six months. The amendment was, by leave, withdrawn.

The LORD CHANCELLOR accepted an amendment to Clause 34, moved by the EARL OF MUNSTER, to enable effect to be given to a desire by any practitioner to practise in partnership.

Lord CECIL moved an amendment to Clause 41, on arrangements for general dental services, requiring that provision should be made in the new health service for the treatment of deafness. Lord ADDISON, for the Government, said that the provision desired by Lord Cecil could not be made on the Clause before the House, but he gave an assurance that before the Third Reading of the Bill he would do his utmost to see whether reference to treatment of deafness could not be inserted in an earlier clause. He would not, however, give any pledge on the matter. On this understanding the amendment was withdrawn.

Disqualification of Practitioners

Lord LLEWELLIN moved an amendment to Clause 42 to make certain that a practitioner should have proper representation, that he could call witnesses and other evidence on his behalf, and that he could, if he wished, have the hearing in public. Lord READING, supporting, said that it ought to be made quite clear that the person appointed by the Minister to hear an appeal should possess legal qualifications capable of enabling him to take a proper judicial view of the evidence. The amendment was agreed to.

The LORD CHANCELLOR moved a new clause to ensure the preservation of associations of denominational hospitals. He agreed that such steps should be taken in the appointment of a resident surgeon, or the matron, but he could not extend it, as Lord Iddesleigh wished, to the staff. The Lord Chancellor said that for himself he would not care two little bits, if he were to be operated on, whether the surgeon possessed sound doctrines on the question of the justification of faith or not. He thought the hospital management committee could be depended on to see that the appointments they made conformed to the considerations of the clause.

Lord IDDESLEIGH said that so far as the Roman Catholic faith was concerned, they did not base their appointments on the faith of the candidates. He was a little more anxious about the staff, because there was the more important moral consideration a patient might have in regard to what a doctor believed about euthanasia. Lord READING said the matter intimately and deeply concerned the Jewish community, and he was grateful to the Lord Chancellor for this happy solution. The new clause was read a second time and added to the Bill.

An amendment by Lord LLEWELLIN to the Seventh Schedule to ensure that the chairman of the tribunal should be a practising barrister or solicitor of not less than ten years' standing was agreed to.

The Report stage was concluded.

Medical News

At the bicentennial celebrations of Princeton University honorary degrees were conferred on Sir Henry Dale, M.D., F.R.S., and Sir John Boyd Orr, M.D., F.R.S.

Prof. N. Hamilton Fairley, M.D., F.R.S., has been appointed honorary consulting physician in tropical medicine to the Ministry of Pensions.

The annual spring graduate course in ophthalmology and otolaryngology will be held at the Gill Memorial Eye, Ear and Throat Hospital, Roanoke, Virginia, U.S.A., on April 7–12.

A course of lectures on recent advances will be given in the House of the Royal College of Obstetricians and Gynaecologists (58, Queen Anne Street, W.) on Fridays, Nov. 1, 15, and 29, Dec. 13, and Jan. 10, at 5 p.m. Admission is free, by ticket, for which early application is necessary, to the secretary of the College. Applicants should state for which lectures tickets are required. Details will be published in the diary column of the *Supplement* for the appropriate weeks.

A conference of clergy, doctors, and nurses on collaboration in the service of the sick will be held in the library of the Royal National Hospital, Ventnor, on Monday, Nov. 4, beginning at 10.30 a.m.

Dr. H. Mandiwall will address a meeting of the Medical Group of the Royal Photographic Society on "Dental Photography" at the Society's house, 16, Princes Gate, S.W.7, at 6.30 p.m., on Thursday, Nov. 7. The address will be illustrated.

The Board of Control (Lunacy and Mental Deficiency) is returning from St. Annes on Sea to London and as from Monday, Nov. 11, its address will be 32, Rutland Gate, Knightsbridge, S.W.7. Telephone: Kensington 3456.

The Chelsea Clinical Society will hold a meeting at the South Kensington Hotel, 41, Queens Gate Terrace, S.W.7, on Tuesday, Nov. 12, at 6.30 for 7 p.m. A discussion on backache will be opened by Mr. B. H. Burns, Mr. Charles Read, and Dr. M. Bewley.

The British Council for Rehabilitation (32, Shaftesbury Avenue, London, W.) has arranged a short course on rehabilitation to take place in London from Nov. 12 to 14 inclusive. The course, which is one of a series to be held in various centres during the next twelve months, is intended to provide an opportunity to study the various phases of rehabilitation as one unified service. It is open to members of the medical profession and the ancillary medical services, to representatives of industry, social workers, and others specially interested in the subject.

At a meeting of the Medical Society of the L.C.C. Service to be held on Wednesday, Nov. 13, at 4.30 p.m., at the County Hall, Westminster Bridge, S.E., a discussion on "Penicillin in the Treatment of Disease" will be opened by Dr. J. Alston, Dr. B. Young, and Mr. J. Jemson.

The annual meeting of Fellows and Members of the Royal College of Surgeons of England will be held at the College in Lincoln's Inn Fields, on Wednesday, Nov. 13, at 5.30 p.m., when a report from the Council will be laid before the meeting. Fellows and Members can obtain copies of the report on application to the Secretary, and a copy of the agenda will be issued on or after Nov. 8 to any Fellow or Member who applies for one.

The Royal Dental Hospital of London will hold its annual clinical "At Home" at 32, Leicester Square, on Saturday, Nov. 23, at 3 p.m. Cases of clinical interest illustrating the scope of the work undertaken at the hospital, especially the treatment of children and the young, are to be shown by members of the staff, and the various departments of the hospital and of the School of Dental Surgery will be open for inspection. On the same evening, at 7 for 7.30 p.m., the dinner of past and present students will be held at the Savoy Hotel, with Mr. E. D. D. Davis, F.R.C.S., in the chair.

A David Anderson-Berry Silver-Gilt Medal, together with a sum of money amounting to about £100, will be awarded during 1947 by the Royal Society of Edinburgh to the person who, in the opinion of the Council, has recently produced the best work on the therapeutical effect of *x* rays on human diseases. Applications for this prize are invited. They may be based on both published and unpublished work and should be accompanied by copies of the relevant papers. Applications must be in the hands of the general secretary, Royal Society of Edinburgh, 22, George Street, Edinburgh 2, *not later than Jan. 31, 1947*. It should be noted that an extension of the period allowed for the receipt of papers has been made.

The 50th anniversary of the foundation of the British Mycological Society was celebrated in London from Oct. 20 to 25. On Oct. 23, at the Royal Institution, the president (Dr. J. Ramsbottom) gave an address on "Mycology Then and Now," and papers on "Medical Mycology: Mould Products" were read, with Sir Alexander Fleming in the chair. The conference was continued on the following day. International delegates to the jubilee meeting were entertained by the British Council. The last item in the programme was a dinner in the refectory of the London School of Hygiene and Tropical Medicine.

Dr. Fred Grundy, barrister-at-law, medical officer of health for Luton, has been appointed chairman of the executive committee of the British Social Hygiene Council in the place of the late Dr. Otto May.

The branches of the General Register Office which were evacuated to the New Cumberland Hotel, Blackpool, at the beginning of the war returned to Somerset House on Sept. 30. While the Registrar-General and a small staff remained at Somerset House throughout the war, the general work of the Office has been carried out at Blackpool, the records of births, deaths, and marriages being arranged and indexed there and then sent to Somerset House to be kept in the vaults. The staff at Blackpool dealt also with all correspondence in connexion with the records. With the return of these evacuated branches the whole of the Office will be housed in London, except a part of the Statistical Branch and the whole of the Central National Registration Office, which remain at Southport.

EPIDEMIOLOGICAL NOTES

Paratyphoid in Sheffield

Four cases of paratyphoid fever were notified in the City of Sheffield on Wednesday, Oct. 16, and 4 more on Oct. 18. A letter was sent by the medical officer of health to general practitioners on that day, and a further 66 cases were notified by Oct. 25.

The outbreak is due to paratyphoid B, and Dr. A. Felix reported that organisms isolated from 7 cases were all Phage Type 2. The symptoms at onset in many cases were vague or misleading. Diagnosis was difficult until the recognition of rose spots and enlarged spleens in a few cases prompted the use of agglutination tests and stool culture. The majority of cases have shown malaise, fever, and gastro-intestinal disturbance, but in a few occipital headache with some stiffness of the neck have been the presenting symptoms. Splenic enlargement and rose spots have appeared in most cases. So far the disease has not been of a serious type and the incidence in the sexes is about equal. The age distribution up to Oct. 25 is interesting:

Sex	Age in Years					
	0–5	5–10	10–15	15–20	20 plus	Total
Male	15	11	4	1	1	32
Female ..	22	11	—	3	6	42
Totals ..	37	22	4	4	7	74

Up to the present the source of the infection has not been found. By Oct. 29 the number of cases involved had risen to 94.

Discussion of Table

In *England and Wales* there were further rises in the incidence of measles 224, and scarlet fever 27; the notifications of both diseases have increased by two-thirds in the past few weeks. A rise was also recorded for whooping-cough 51, following a continuous decline over seven weeks. There was a fall in the notifications of diphtheria 50 and of dysentery 19.

No local variations worthy of note were observed in the trends of scarlet fever or whooping-cough. Lancashire was mainly responsible for the fall in the incidence of diphtheria; in this county the cases fell from 94 to 53. The increase in cases of measles was confined to a few counties, notably Durham 97, Middlesex 48, and Devonshire 48; the only decrease of any size was Lancashire 43. The returns for dysentery were the smallest for over five years.

In *Scotland* a decrease was recorded in the notifications of acute primary pneumonia 22, diphtheria 17, and scarlet fever 16. Increases were reported for whooping-cough 40 and cerebrospinal fever 9.

In *Eire* the notifications of diphtheria declined by 8 and of measles by 6. The incidence of diarrhoea and enteritis remained unchanged with 58 cases, of which 47 were recorded in Dublin C.B.

In *Northern Ireland* the returns for scarlet fever showed an increase of 22 and for diphtheria 5. Of the 54 cases of scarlet fever 23 were notified in Belfast C.B.; the remaining cases involved 15 areas.

Statistical Review for 1942

The publication of the Registrar-General's *Statistical Review for 1942* shows that the mortality in that year improved compared with the earlier war years. The death rate was 12.3 as against 13.5 and 14.4 in the two preceding years. Infant mortality recovered from the setback in 1941, when a rate of 60 was recorded, and fell to 51 per 1,000 live births, which equalled the lowest previously recorded rate. Maternal mortality (including abortion) was 2.02 per 1,000 total births. The death rate from diphtheria, 192 per million children under 15, was the lowest ever recorded.

Deaths from tuberculosis began to increase in 1940. The deaths during 1939–41 were 21,523, 23,470, and 23,339. In 1942 the number of deaths fell to 20,730, the lowest figure ever recorded. Cases, and fatal cases, of cerebrospinal fever rose in 1940 to about ten times the pre-war level. A small decrease was noted in 1941, and in 1942 the cases fell to 5,286 with 1,143 deaths, which were little more than half the corresponding totals of the previous year. There were 3,891 civilians killed in air-raids compared with 22,215 and 19,543 in 1940 and 1941. A decrease in the number of suicides was recorded.

Week Ending October 19

Notifications of infectious diseases in England and Wales during the week included: scarlet fever 1,048, whooping-cough 1,375, diphtheria 278, measles 2,385, acute pneumonia 407, cerebrospinal fever 30, dysentery 57, acute poliomyelitis 20, paratyphoid 22, typhoid 5.

No. 41

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Oct. 12.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1946					1945 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	37	3	19	1	2	36	4	20	1	—
Deaths		—	—				1	1		
Diphtheria	269	21	88	36	15	565	44	155	96	20
Deaths	5	—	1	2	—	10	—	1	—	—
Dysentery	44	7	29	1	—	286	40	84	1	1
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	1	—	—	1	—	—	—	—
Deaths		—					1			
Erysipelas			43	8	2			37	8	—
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				58					54	
Deaths	44	2	8	17	1	50	5	23	19	6
Measles*	2,005	72	104	46	14	446	48	61	45	2
Deaths	1	1	—	1	—	—	—	1	—	—
Ophthalmia neonatorum	69	2	12	—	—	61	6	10	—	—
Deaths										
Paratyphoid fever	6	—	1 (B)	—	—	6	—	14 (B)	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	351	31	1	3	1	415	21	5	—	5
Deaths (from influenza)†	9	3	1	—	—	11	2	—	1	—
Pneumonia, primary			143	21				151	15	
Deaths		23		7	7		25		4	3
Polio-encephalitis, acute	1	—				3	—			
Deaths		—					—			
Poliomyelitis, acute	22	3	1	6	1	45	2	1	2	—
Deaths		—					—			
Puerperal fever		1	15		1		3	15		—
Deaths										
Puerperal pyrexia‡	156	13	20	1	—	145	5	13	—	—
Deaths		—					—			
Relapsing fever	—	—			—	—	—			
Deaths										—
Scarlet fever	1,106	94	202	39	54	1,849	126	341	32	42
Deaths	—	—	—	—	—	1	—	—	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	3	—	2	2	25	10		2 2	7	—
Deaths	1	1	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	1,362	108	136	36	15	970	80	39	36	3
Deaths	12	—	1	1	—	3	1	—	2	—
Deaths (0–1 year)	327	39	59	41	12	320	23	52	47	18
Infant mortality rate (per 1,000 live births)										
Deaths (excluding stillbirths)	3,846	579	507	179	106	4,112	655	539	176	132
Annual death rate (per 1,000 persons living)			11·2	11·5				12·2	11·4	
Live births	9,532	1477	1160	414	269	6,865	879	869	424	289
Annual rate per 1,000 persons living			23·3	26·5				17·4	27·4	
Stillbirths	258	35	31			206	26	23		
Rate per 1,000 total births (including stillborn)			26					26		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales, and Eire.

Letters, Notes, and Answers

All communications with regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1. TELEPHONE: EUSTON 2111. TELEGRAMS: *Aitiology, Westcent, London.* ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.
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ANY QUESTIONS?

Bathing after a Heavy Meal

Q.—*Is it true that bathing in cold water soon after a heavy meal carries the risk of sudden death?*

A.—This belief is widely held, and the Royal Life Saving Society's handbook warns feaders "on no account to bathe shortly after a hearty meal"; however, it does not describe the consequences of transgression. Cramp, which is a painful muscular spasm, cannot of itself be fatal, though it is possible that a bather so afflicted might drown. Even this is uncertain, for many of the authorities on swimming regard the dangers of cramp as greatly exaggerated. Thus, Dr. Hunter Barron, himself both a noted swimmer and a frequent sufferer from cramp, wrote in 1886 that cramp seldom killed and most of the alleged instances were examples of heart failure. The cause of cramp in swimmers is itself debated. Winmann, in *Colymbetes sive de Arte Natandi*, published in 1541 and the first known book on the subject, attributed it to cold. Although this is still currently believed, recent authors regard it as mere superstition. Cramp is more rationally presumed to be a symptom of muscular fatigue, although the blood supply to the muscle and a disturbed salt metabolism are of importance in some cases. That cramp occurs more readily after a heavy meal than at other times is unproved, although it would be easy to give physiological reasons for its doing so. Inability to move the limbs would presumably be a symptom of cramp.

Medico-legal authorities speak of the possibility of shock from the sudden application of cold to the skin causing reflex stoppage of the heart. Crookshank (*Trans. med. leg. Soc.*, 1909–10, **7**, 11) believed that one-third of the fatalities apparently due to drowning were the consequence of this reflex inhibition. There is again no evidence that such an occurrence is more common after a meal. In short, there is evidence, albeit unsatisfactory, that very occasionally immersion in cold water may cause sudden death, but none that this rare accident is more common after a heavy meal. It is easy to see that such a tradition could arise from occasional instances of coronary thrombosis, to which both sudden exertion and a large meal are recognized predisposing factors.

Trichomonas Vaginalis and Streptococci

Q.—*Can you give me any information about a non-haemolytic streptococcus which is said to be found in conjunction with Trichomonas vaginalis?*

A.—This question probably refers to the claim by Hibbert (*Amer. J. Obstet. Gynec.*, 1933, **25**, 465) that *Trichomonas vaginalis* can produce vaginitis only when there is present in the vagina a non-haemolytic streptococcus the characters of which are not specifically defined. In support of his claim Hibbert maintained that *Trichomonas vaginalis* may be present in the vagina unassociated with evidence of infection; that in most cases of trichomonas vaginitis a non-haemolytic streptococcus is present, often as the predominating organism; that cases of vaginitis may occur in which the non-haemolytic streptococcus is apparently the causative organism; and that treatment with a broth filtrate of the organism produced cure or amelioration of the mixed infection with disappearance or reduction in the numbers of non-haemolytic streptococci but not of the trichomonas. In addition, three volunteer patients in whose genital tract *Trichomonas vaginalis* was implanted without producing clinical infection developed vaginitis when a culture of the non-haemolytic streptococcus was added. These claims have not apparently been substantiated, and in the discussion that followed Hibbert's paper there was much critical comment on his findings.

Notification of Gastro-intestinal Diseases

Q.—*Please define "dysentery" and "diarrhoea and sickness syndrome (gastro-enteritis)" in relation to notification (a) under the Public Health Regulations and (b) under the Food and Drugs Act.*

A.—In the Public Health (Pneumonia, Malaria, Dysentery) Regulations, 1919, and the Public Health (Infectious Diseases) Regulations, 1927 (S.R. & O., 1927, No. 1004), it is stated that "dysentery includes amoebic and bacillary dysentery." There is no "clinical" definition or description of the disease. This absence of clinical description is common to all the notifiable infectious diseases, with the exception of puerperal pyrexia.

By the Food and Drugs Act, 1938, Section 17, it is the duty of a registered practitioner to notify the medical officer of health of the district of any patient who is suffering or suspected to be suffering from food-poisoning. In the Act "food" is defined as "any article used for food or drink for human consumption other than drugs or water, and includes (*a*) any substance which is intended for use in the composition of or preparation of food; (*b*) any flavouring matter or condiment; (*c*) any colouring matter intended for use as food. Food-poisoning means poisoning caused by the partaking of any substance which comes under the given definition of food."

The "diarrhoea and sickness syndrome (gastro-enteritis)"—which has many synonyms—is not generally notifiable, but is so in some areas by local order with variations in the age limit. In one area it may be notifiable only in children up to 2 years old; in another area the age limit may be 5 or even 10 years. If, therefore, a child is found to be suffering from diarrhoea and vomiting in an area where gastro-enteritis is notifiable, it is possible to notify the case under the Public Health Act if dysentery is suspected; under the Food and Drugs Act if food-poisoning is suspected; and under the local order if gastro-enteritis is suspected. The final decision would rest on the history, and on the extent and nature of the clinical and bacteriological evidence.

Radiotherapy of Hodgkin's Disease

Q.—*What is the prognosis in cases of Hodgkin's disease treated by radiotherapy?*

A.—Radiotherapy is not a cure for Hodgkin's disease. It will abolish local enlargement of lymph nodes, but subsequently other groups are affected. Finally the patient reaches a stage of cachexia in which there is little response to further irradiation. It is doubtful whether life is prolonged by this treatment, although symptoms are temporarily relieved. Few patients survive more than four years.

Adrenaline Secretion and Asthma

Q.—*It is commonly stated that psychological imbalance is one of the most important aetiological factors in spasmodic bronchial asthma, and that an attack is often determined by an acute increase of apprehension or anxiety. In such an event one might expect the endogenous secretion of adrenaline to be correspondingly increased, and this would go far to counteract any tendency to bronchial spasm. Is there any evidence that the production of adrenaline is deficient in asthmatics, or that their over-anxious temperament is responsible for a sub-clinical state of adrenal exhaustion? If not, how may this apparent paradox be explained?*

A.—No evidence has been found that the production of adrenaline is deficient in asthma, and the absence of other signs of lessened sympathetic activity supports the view that there is probably no type of asthma caused by a deficiency of natural adrenaline secretion. Also there are no pathological changes in the adrenals in asthmatics. The paradox referred to in the question exists only if the psychological factors that precipitate asthma lead to an increased output of adrenaline. In anxiety states and neuroses generally it cannot be said that an increased secretion takes place, and, while there is possibly an enhanced sensitivity to adrenaline in some cases, this is not to be taken as indicative of any well-defined humoral change.

It is possible that the psychological factors which precipitate asthma may in fact give rise to a parasympathetic overaction and thus facilitate the onset of an attack. It has recently been suggested that the emotions of anger and elation are associated with parasympathetic excitation, and that of fear with sympathetic excitation. In this last connexion it has been noticed during conditions of prolonged fear, as in air raids, that asthmatic subjects have not had attacks in circumstances where they might have expected them. Here it is possible that increased adrenaline production has prevented the onset of bronchial spasm in the manner suggested in the question; but it seems highly probable that, in so far as psychological factors play a part in asthma generally, they do so by increasing the parasympathetic sensitivity to a greater extent than the sympathetic sensitivity of the bronchial musculature.

Benzyl Benzoate Dermatitis

Q.—*Can you suggest treatment for a skin affection apparently due to prolonged application of benzyl benzoate? The patient suffers a severe irritation when he gets warm in bed, but has no discomfort during the daytime.*

A.—It is assumed that the patient referred to has developed chronic dermatitis from the prolonged use of benzyl benzoate emulsion for scabies, and is not suffering from an independent itching dermatosis. The dermatitis is thus exogenous and should respond to rest, avoidance of baths, and simple greasy applications, such as oily calamine lotion or boric–zinc ointment to which a small amount of arachis oil has been added. Sedatives given at night are helpful, and whole-blood injections, if the skin permits, assist in allaying itching.

Pituitary Extract in Obesity

Q.—*What is the present-day teaching as to the oral administration of whole-gland pituitary extract? In treating obesity how is pituitary whole gland administered?*

A.—There is no experimental or clinical evidence in favour of the view that whole-gland pituitary extract given orally exercises a hormonal influence in man or other mammals. Some clinicians still hold the view that it augments the effect of thyroid in cases of obesity, and others prescribe pituitary gland because the patient has already received thyroid alone without appreciable benefit. If so administered, tablets of 1 or 2 grains (65 or 130 mg.) of pituitary whole gland or anterior pituitary gland (dried extract) are often prescribed.

Quite apart from the probable ineffectiveness of pituitary gland by mouth, it is doubtful if any available pituitary hormone given by injection has any influence on obesity. Some years ago Collip described an extract of pituitary gland which increased the metabolic rate and lowered the respiratory quotient, indicating metabolism of fat, and some initial clinical work with this hormone was published. However, nothing further has been heard of this latter work for several years, and it therefore seems doubtful whether any positive results have been sustained.

Leuco-erythroblastic Anaemia

Q.—*Should leuco-erythroblastic anaemia be differentiated by reason of the stimulating or irritating effect of certain lesions on the bone marrow or by the blood picture? If by the blood picture, should not familial acholuric jaundice, von Jaksch's syndrome, and the erythroblastic anaemias also be considered leuco-erythroblastic?*

A.—It is important when discussing leuco-erythroblastic anaemia to agree upon a definition of the term. It refers not to a "disease" but to certain changes in the peripheral blood. These changes are: anaemia, which varies in degree but may be insignificant, with erythrocytes usually of normal size; reticulocytosis; the presence of nucleated red blood cells; a total leucocyte count ranging from 2,500 to 30,000 per c.mm. or even higher; and a characteristic alteration in the differential leucocyte count. This alteration is not simply "the presence of immature cells" but a "shift to the left" of the granular series, with a regular gradation decreasing from large numbers of fully segmented neutrophils, through regularly diminishing proportions of cells of all grades of immaturity, to a small percentage of myeloblasts. In some cases the "shift" does not extend as far as the myeloblast. Defined in this manner a leuco-erythroblastic anaemia may accompany a large variety of disease processes, from carcinomatosis of the bone marrow to acute haemolytic anaemia.

This is equivalent to saying that, as leuco-erythroblastic anaemia is a symptomatic blood change and not a "disease," the label should be applied to those cases in which the blood change exists, irrespective of the underlying pathological process. It is true that there is a tendency to limit the use of the term to cases in which this blood picture is associated with carcinomatosis of the bone marrow, myelosclerosis, and related disorders. It is also true that in these affections leucopenia and thrombocytopenia are common, while in others leucocytosis is the rule, but the restriction is illogical. The question illustrates the pitfalls of haematological nomenclature and the need "to define one's terms."

Corneal Herpes

Q.—*What are the earliest signs by which one can recognize corneal herpes, and what is the treatment? Does it cause corneal scarring?*

A.—Corneal herpes is a rather indefinite term. Presumably it refers to corneal lesions of the herpes simplex or herpes zoster type and not to mere vesicle or bulla formation. The difficulty arises from the fact that recognizable vesicles suggestive of herpes simplex or zoster are rare in the cornea in these affections, while vesicle formation which has nothing to do with these affections is not uncommon. Taking the aetiological rather than the morphological sense of the question, it is again difficult to be unequivocal, for there are a whole series of corneal lesions which are regarded as herpetic in origin, the commonest being dendritic ulcer, superficial punctate keratitis, disciform keratitis, and some varieties of keratitis profunda. In all these affections diminution or loss of corneal sensation is the most striking early feature, and this is most marked in the corneal complications seen in herpes ophthalmicus. Generally an associated herpetic lesion is absent, and the assumption that these corneal lesions are herpetic in origin is based on rather inconclusive laboratory findings.

The treatment of corneal herpes depends largely on the type of corneal lesion. In all cases two drops of atropine 1% are instilled three times a day, and the eye protected either by dark glasses or by a bandage. In dendritic ulcer the denuded epithelium may be touched with pure carbolic or a 30% solution of sodium sulphacetamide, and such treatment may have to be repeated frequently, even daily. In superficial punctate keratitis no local medication, apart from the instillation of atropine, is of any value, and this probably also applies to disciform keratitis and to keratitis profunda. Immune serum has been suggested for superficial punctate keratitis, but results are conflicting. There is no treatment known to abort an attack of corneal herpes, and the prognosis depends on the type of lesion. In superficial punctate keratitis recovery is the rule after six to twelve weeks, and dendritic ulcers run almost as protracted a course. In both conditions corneal scarring is unusual, but dendritic ulcers tend to recur. Occasionally disciform keratitis clears remarkably well. More frequently both disciform keratitis and keratitis profunda leave extensive and marked corneal opacities.

Air Travel for a Baby

Q.—*Is there any contraindication to a journey by air to New Zealand for an infant of 7 weeks? Should the baby be protected by inoculation against yellow fever?*

A.—A full-term normal infant would probably tolerate the flight satisfactorily, but it would be essential to provide an infant's oxygen tent (which can be improvised from an infant's gas mask) in case of cyanosis, or in the event of any part of the flight being at an altitude of over 7,000 ft. (2,100 m.). In the case of a premature baby or of one who has shown evidence of atelectasis or intracranial haemorrhage the journey by air would be contraindicated. The risk of failure of the heat-control system in the plane should also be considered. Under these circumstances there is a very great drop in temperature if the plane is travelling at 10,000 ft. (3,000 m.) or higher.

Infants and small children stand protective inoculations against yellow fever well, and do not appear to be upset by these injections. Inoculation is compulsory, as in adults travelling by air.

LETTERS, NOTES, ETC.

Amoebic Dysentery

Lieut.-Col. C. CROPPER (Keighley) writes: With reference to the question and answer on amoebic dysentery (Aug. 10, p. 215) I should like to make two constructive comments. I have found that in very many patients phenobarbitone by no means prevents the emetic effects of emetine bismuth iodide. The simple precaution, however, of "washing down" the capsule with an iced drink, so that it reaches the duodenum before it melts, works admirably. The capsule of E.B.I. must not be taken until four hours after the last meal of the day. This method renders phenobarbitone quite unnecessary. Secondly, retention enemata will be neither effective nor tolerable without close attention to the details of technique. I have found "bowel washouts" ill-advised, as they tend to bring down into the lower bowel the contents of the ileum, thereby defeating the object of the manœuvre and incidentally causing an unpleasant griping pain. A bicarbonate *enema* of the smallest effective volume is in my experience, both as patient and physician, the maximum preparation called for; at least four hours thereafter the chiniofon is introduced. The evacuant enema is given in the morning at any time that suits the nursing staff, and the retention enema at any time in the afternoon; and the latter is usually retained indefinitely—i.e., until the next morning's evacuant enema. If not, 1/2-1 dr. (1.8–3.5 ml.) of tinct. opii may be added to subsequent retention enemata. Restriction of meals is unnecessary. On the above lines the desired result is achieved—viz., the maintenance of the chiniofon in contact with the ulcerated mucosa in the maximum concentration for the maximum time. It is essential that treatment be carefully supervised, with deliberate study of the individual patient's reactions; otherwise all that is achieved is the subjection of the patient to a prolonged and trying ordeal. My own impression is that the best results are given by a combination of chiniofon enemata with oral diodoquin, but many cases still defeat all attempts at cure.

Milk "Priority"

Dr. G. L. DAVIES (Hove) writes: The daily papers show that the public is again becoming restive about milk priorities, and rightly so. Doctors, with some reason, had hoped that by this time the irksome task of deciding who in every case was entitled to extra milk would have been a thing of the past. However, as the food situation continues to deteriorate, people will look round for some ailment which they may put forward to entitle them to extra milk, and by now they have got to know the ropes. Holders of priority milk certificates—and some have now held them for a matter of years—are as a whole a selfish race of people, and any determined suggestion on the part of a doctor that they are now better and should give up their claim to priority only produces some exhibition of rudeness and a mild fracas in the surgery. Some have had certificates on the strength of symptoms suggestive of peptic ulcer, and they resolutely refuse to go and have their symptoms verified or disproved by *x* rays, usually contriving to find some excuse to delay this inconvenient matter. It is now time that the last word in this business was taken out of the hands of the family doctor and entrusted, may one suggest, in every large centre of population, to a small panel of medical men and women who are, preferably, not in general practice. The family doctor should be asked to submit a few written details about each case and add his private opinion, and the final decision should rest with the referees. Meetings at which applications for extra milk (i.e. for those cases which present some difficulty) are considered might take place one a month, so as not to take up too much of the time of the doctors concerned. Adequate payment per session should be made to each doctor by the Ministry of Food. To some all this will appear like trying to make a mountain out of a molehill, the sort of small campaign which a Prussian general once said wasn't worth the bones of a single grenadier. As a doctor in a numerous working-class practice, striving each day to cope with ill-defined ailments which are unresponsive to ordinary medical treatment, one is forced to the conclusion that the human body is beginning to rebel against synthetic vitamins, and little enough of those. Until the war ended we heard much about the writing on the wall. What we hear in our surgeries and what our wives hear in queues is writ far larger than any fictitious writing on the wall. Let our rulers ignore it at their peril. [See also p. 661 on this subject.]

Scorpion Sting

Dr. B. V. RAMASWAMY (Bangalore, South India) writes: In the *Indian Medical Gazette* of Nov., 1939, and Jan., 1940, there were two small notes about scorpion sting. (i) "Fresh leaves of *Acalypha indica* when rubbed well at the site of the sting relieve the pain and cure the patient in about five minutes." (ii) "A few whiffs of chloroform inhalation almost immediately cure the pain. About 2 dr. (7 ml.) may suffice for nearly 50 persons." Since then I have tried chloroform inhalations for scorpion stings with great success. There are two types of pain experienced by such patients. One is a local, throbbing pain at the site of the sting, and the other a rapidly spreading, shooting pain. If the patient gets the treatment within 5–10 minutes of the sting both the pains disappear in about 5 minutes. In cases where the treatment is begun after some time—more than half an hour after the sting—the shooting pain disappears in 5 minutes, but the local pain persists though in a bearable degree. To eliminate that pain I usually inject a local anaesthetic all round the site of the sting, which gives complete relief. *Treatment.*—A few drops of anaesthetic chloroform are sprinkled over a small piece of cotton-wool and held near the patient's nostrils. He is then asked to inhale deeply a number of times. Most of the patients if treated early find relief of pain in 2–5 minutes. I would very much like others to try this simple treatment and report their experience. I would also like to know how chloroform neutralizes the toxins of the scorpion.

Varicose Veins

Mr. R. ROWDEN FOOTE (London, W.) writes: This all too common condition has received scant notice from the statisticians in the past. A few months ago inquiry at the Ministry of Health produced the answer that no figures were available. In fact they had no knowledge as to how many of the population suffered from the condition or how much invalidism was caused by varices and their complications. My attention has recently been drawn to morbidity figures in a Ministry of Health publication *On the State of the Public Health during six years of War* (1946) which seem to give confirmation to the unproven prevalence of this disease in the community. I need only quote a few statements from this booklet taken at random in order to bring out my points, the figures being quoted per 1,000 of the admissions to E.M.S. hospitals during certain of the war years. The total number of diseases of the veins in males treated as in-patients in E.M.S. hospitals in 1942 shows the astonishing figure of 86 per 1,000 in England and 92 per 1,000 in Scotland; in 1943 this figure was reduced to 75 per 1,000. This figure, reaching nearly 10% of hospital admissions, is only exceeded by one other group of patients—those suffering from diseases of the skin and cellular tissues. Under the heading "Periods of Disablement for Men from the ages of 15 to 54 admitted to E.M.S. hospitals from the Services during 1942 and 1943" we find that out of approximately 2,000 cases of varicose veins

213	are	incapacitated	for	10 days
654	,,	,,	,,	14 ,,
122	,,	,,	,,	21 ,,
227	,,	,,	,,	28 ,,
198	,,	,,	,,	42 ,,
313	,,	,,	,,	56 ,,
110	,,	,,	,,	91 ,,
6	,,	,,	,,	182 ,,

In other words varices, forming 10% of all hospital admissions, and being the *second largest group of complaints treated by the E.M.S.*, present a very high figure as far as duration of incapacity is concerned. A further point brought out by these statistics is that in the diseases of veins men's rates were much higher than those for women. It has been said that statistics can "prove anything, even the truth"; but even so, here is serious food for thought. Why is it that the humble varix receives so little consideration in this country? In many hospitals it still serves as practice for the student or recently qualified surgeon. Varicose ulcers, which should become rare with adequate treatment, still tend to multiply and to be relegated to the dark corners of our hospitals. Phlebitis is treated by immobility and hypostatic eczema by unguents. The "set up" of the average varicose department is reminiscent of the state in which many fracture clinics functioned in my early student days. It is to be hoped that in the process of time this prevalent disease may receive the same expert care as is now being given in our orthopaedic departments. One hundred years ago, standing by the bedside of a sufferer from varicose ulceration, Sir Benjamin Brodie said to his students: "Here is a case of a very distressing nature, and such an one as may meet you at every turn of your practice; and your reputation in early life will depend more upon understanding a case of this kind than on your knowledge of one of more rare occurrence. . . ." (*Lectures on Pathology and Surgery*, 1846.) What has been done to put the treatment and care of the varicose patient into any better state than it was when these words were spoken a century ago?

Correction

Prof. S. LEITIS, of Moscow, wishes to correct two sentences in the translation of his article "The Importance of Autoregulation in Nitrogen Metabolism" published in the *Journal* of June 8. On p. 875, column 2, line 16 from the end the words "increase in the nitrogen metabolism" should read "increase in the nitrogen content." On p. 876, line 9 from the top, the following words should be added: "after introduction of protein or nitrogen metabolites."

Allen & Hanburys, Ltd., announce that from Nov. 4 they are adopting a 5-day working week. The offices and warehouses at Bethnal Green will be closed on Saturday mornings, but their West End branch at 7, Vere Street, W.1, will be open to deal with orders for urgent medicines.